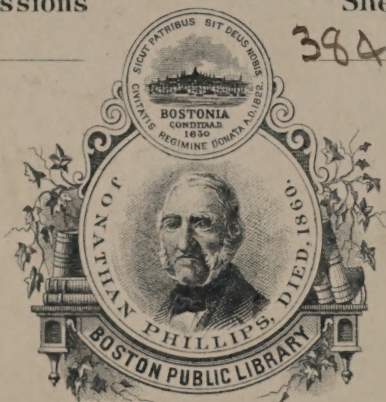


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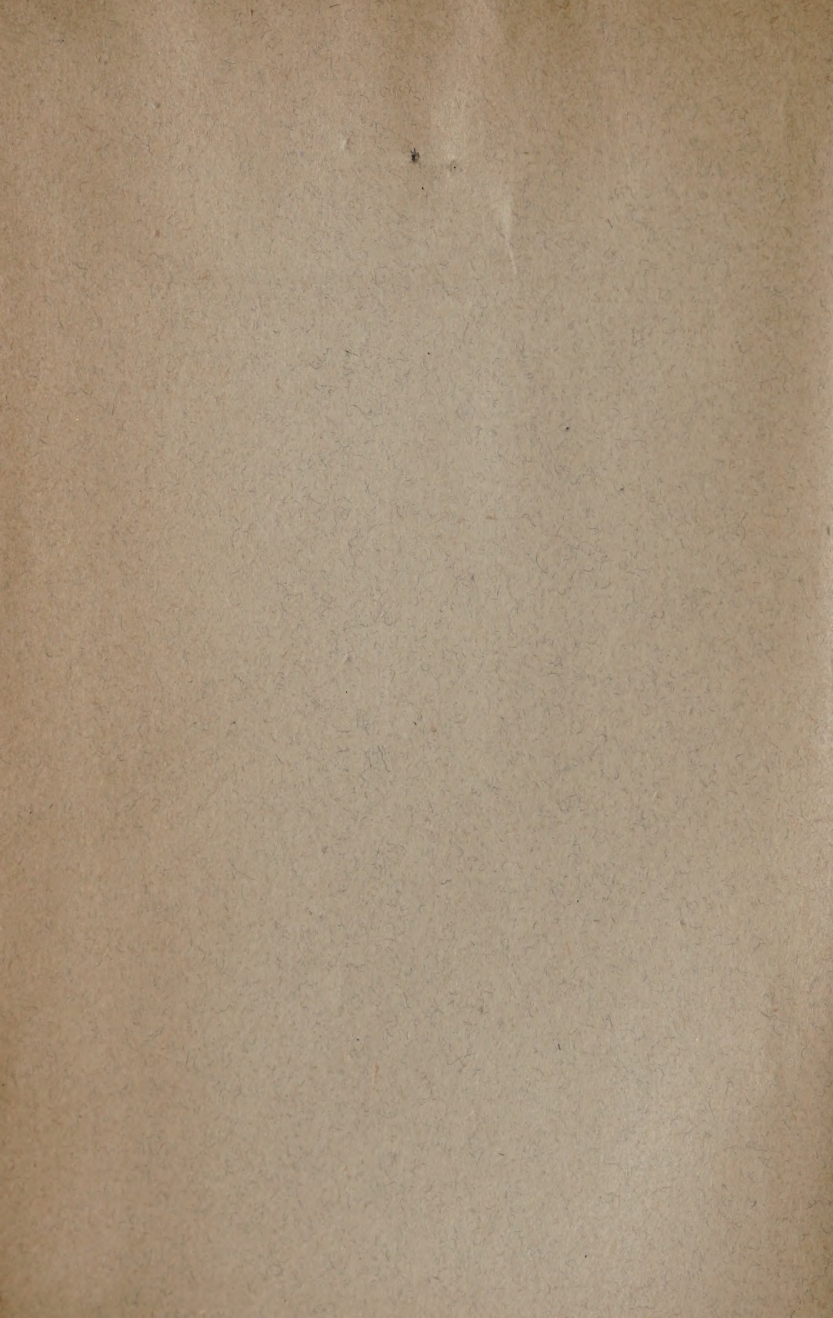
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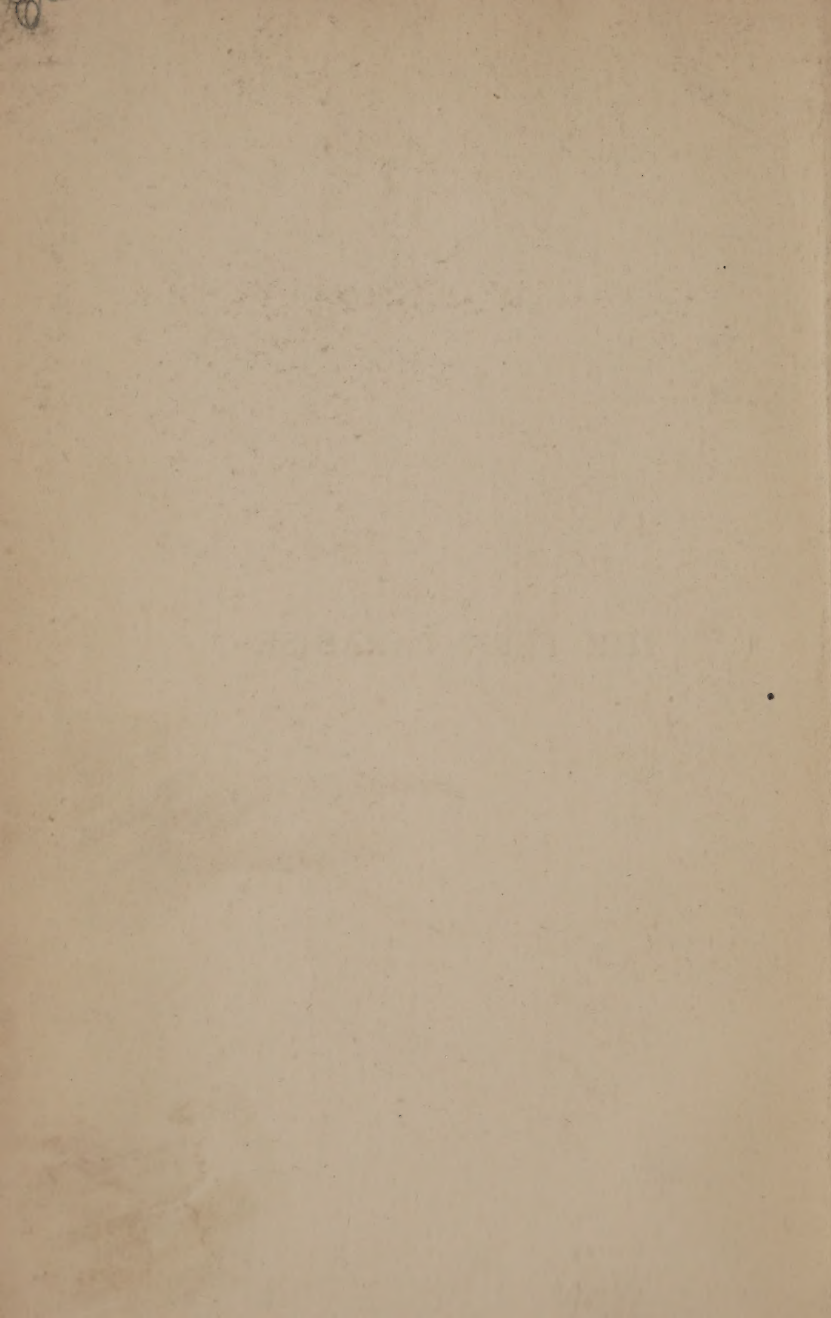
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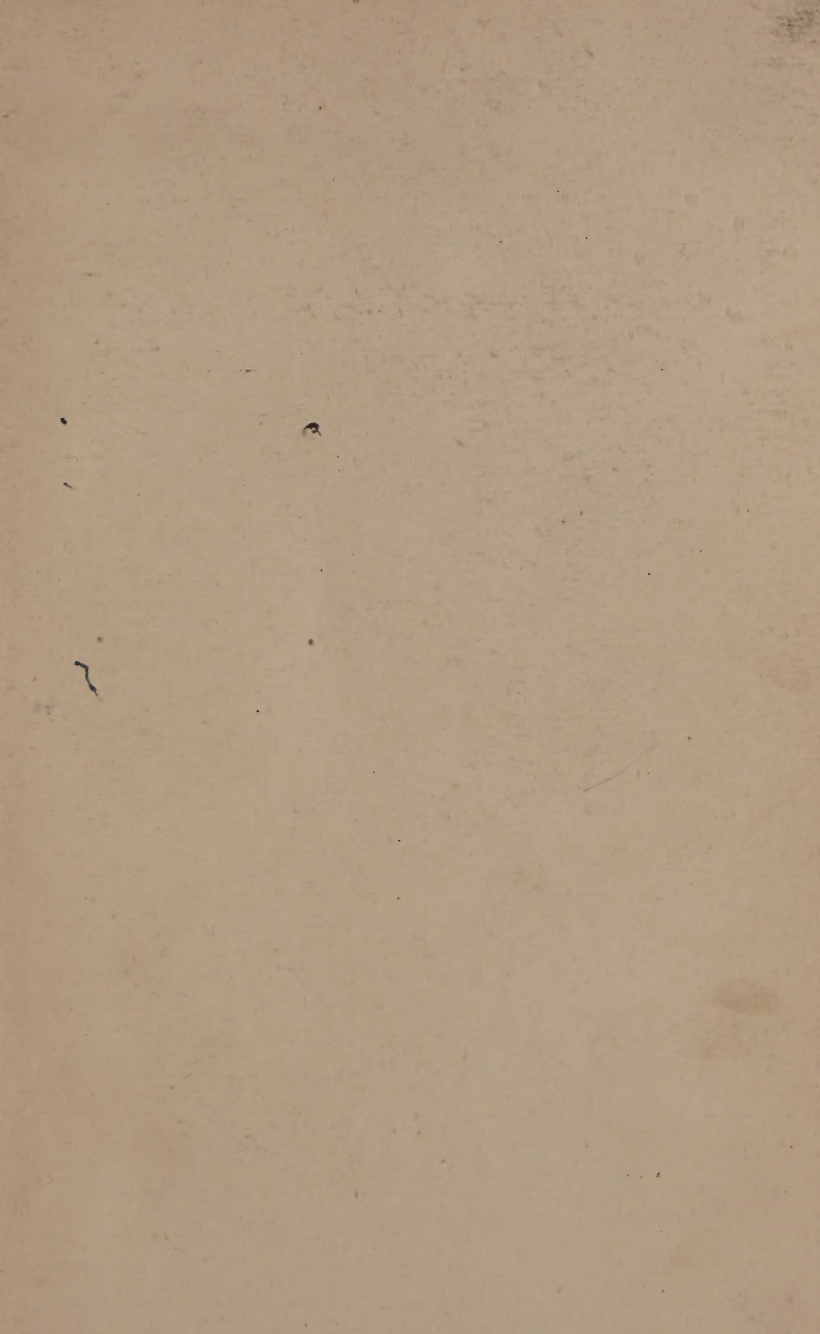
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THE FERN PARADISE.







THE
FERN PARADISE:

A Plea for the Culture of Ferns.

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BY
FRANCIS GEORGE HEATH.

Hon. Secretary of the Park Preservation Society;

AUTHOR OF "THE ENGLISH PEASANTRY," "THE 'ROMANCE' OF PEASANT LIFE,"
ETC., ETC.

"Oh, what can equal the beauties of nature!"

Leaves from the Journal of our Life in the Highlands.

London:
HODDER AND STOUGHTON,
22, PATERNOSTER ROW.

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WATSON AND FAZEL, Printers, London and Augsburg.

THE AUTHOR TO THE READER.

THIS little volume has been written with an earnest purpose. The various chapters of which it is composed will disclose in detail what that purpose is. But an author has no right to expect that the public, however indulgent, will read his book unless he can, in his preface, show cause why they should do so. Should he by the exercise of rare ability succeed, in his introductory chapter, in chaining the interest of his readers, he may need no better passport to their continued indulgence than that supplied by a powerful imagination and a brilliant literary style. But, if he eschews the endeavour to dazzle, and merely aspires to be useful, he must adopt the humble rôle of an apologist, and give such preliminary explanations of the object which he proposes to accomplish as may

secure for him a patient hearing on the part of those whom he desires to please and to benefit.

The earnest purpose of this little volume, then, is that it may assist in developing the popular taste for Ferns in such a way as to lead to the more extensive cultivation of these graceful and beautiful plants in our gardens and in our dwelling-houses; nay, even so far as such an arrangement would be practicable, in our places of business, wherever they may be.

The author claims to have originated the idea which these pages will unfold. He has noticed—and many others have doubtless done the same—that within recent years there has been in our cities and towns a great development in the practice of what is called “window gardening.” This practice has not been confined to the humbler classes. Rich and poor have come now to adopt “window gardening” to a much greater extent than formerly; and so far as the poor are concerned, attempts have been made by philanthropic persons and by philanthropic associations to foster and encourage the new taste. The wealthy, when they have not

window gardens, have the means of providing similar objects of enjoyment. Their wealth enables them to gratify their tastes; and these are not fettered by any considerations of cost. But in our cities and towns, the immediate surroundings of the poor—whose existence is too commonly cheerless and sad—are painfully dismal. Penury and suffering too add piquancy to the depression which is naturally caused by such dismal surroundings: and the efforts of those who have spent time and money in the endeavour to relieve the dull monotony of the lives of the poor, have been directed to a noble end.

Whilst however the poor of our large towns feel more keenly than the well-to-do or the rich the necessity of having in or about their dwellings some such enlivening influence as would be produced by the presence of plants or flowers, it is the rich who, from their more abundant means, have adopted “window gardening” to the greatest extent. But amongst all classes of town dwellers the recent increase in the delightful practice is no doubt due to the same cause. Our big towns and cities

have been acquiring an accelerated rate of growth. Houses have thus, by a rapid process of extension, been blotting out the green fields and hedgerows. In London this process has perhaps acquired a greater degree of development than elsewhere; but wherever it has been in operation the withdrawal of the country has increased the desire of those who have thus been gradually enfolded more and more completely within the stifling domain of bricks and mortar, to compensate for the absence of green fields by surrounding themselves with *something* which is fresh and green.

To a certain extent this desire has been met by the formation of parks or public gardens within central and densely populated town districts; but the requirements of health and enjoyment have not been sufficiently met by such means, the number of public gardens in the Metropolis and elsewhere being far too small.

Next to the public parks and gardens the gardens of dwelling houses in town districts help to supply the popular want for the refreshing presence of trees, shrubs, plants and flowers. But

it is the exception to find gardens in the central parts of large towns. Small open spaces or yards may sometimes exist in lieu of gardens. But in such spaces everything has, too frequently, a bleak and arid aspect, except where "boon nature" has thrown down a few blades of grass or some hardy weed which can bravely live amidst uncongenial surroundings; or where, perhaps, the occupiers of the houses which possess such dismal open spaces may have introduced shrubs, plants, or flowers in pots. In town suburbs gardens are more plentiful, and flower gardening occasionally is practised with great artistic effect. Even in town suburbs, however, there is many a bleak uncultivated corner which might be subjected with advantage to the enlivening influence of plants.

But the Ferns—why are not they brought into more extended cultivation? Not because there is any disinclination to do so on the part of town dwellers. On the contrary, are the numbers not counted by hundreds of thousands of those who, chained to business in the heart of the great business centres, and consequently kept for

THE AUTHOR TO THE READER.

many months within city walls, wearily pine for fresh country breezes, and for the green, the delightful, the refreshing green of the fields and hedgerows?

Well does the author remember his own feelings after a first residence of a few months in London. Coming away from the delightful West of England, amidst whose beautiful scenes he must have imbibed in his earliest years his passionate love for hill, woodland and stream, the atmosphere of the Metropolis hung heavily upon him. Six months of that first residence in the great wilderness of houses seemed six years to him. But oh! the glad sense of freedom when the time came at the end of the six months for relaxation, and business could be thrown up for a few weeks. How keen was the enjoyment of the railway journey for a hundred and sixty miles—how delightful to drink in the lovely landscapes which passed in rapid alternation before his eye!

Such an experience is by no means a solitary one. It has been said that there are hundreds of thousands of town dwellers who every day are

wearily pining for the country, or something which will remind them of it. The lives of such are chiefly passed in two spheres—the sphere of work and the sphere of home. They live in one place, and they work—whether as employers or employed—in another, or it may be in others.

It is probably because they have not given a thought to the beautiful ferns that it has not occurred to them how much more pleasant would be the associations of their dwellings and their places of business, were they to fill up every vacant and available corner with these graceful and elegant plants. Sometimes it is perhaps because the idea of having flowers in sunless corners would be impracticable that the idea of having any substitutes for flowers is abandoned. But, as it has been urged elsewhere—“ferns will grow where flowering plants would perish.”

Will it not be admitted then that a vast fund of pleasure is here opened up,—pleasure which is within the reach of all? When it is remembered how much in this life happiness and misery, comfort and discomfort, depend upon ourselves and

upon acts or habits that are within our control ; when it is remembered too how easily we accustom ourselves to jog on in a round of monotonous existence when perhaps a slight, a very slight, attention to the details of enjoyment would furnish us with constant sources of pleasure, it will be allowed that a most important object will be secured if it be found possible successfully to urge, that such attention should be given to the subject of which this volume treats.

More than a year ago the author conceived the idea of this book, and fixed upon its present title. He subsequently contributed three papers, which embodied the plan of the proposed book, to the pages of a well-known magazine. These papers are now reproduced in a somewhat altered form, in the Introduction and in Chapters I., II., VI., and VII. of Part I. of this volume.

The author feels that in this address to the reader he has already trenched upon matters which have been dealt with in another part of the volume ; but he is anxious in this place to put forth a good plea for the object which he desires to effect ; for

unless he can do so he is conscious that he can have no claim, as he has already said, upon the reader's indulgence.

In conclusion, the author would express the earnest hope that his little volume may be the humble means of increasing the popular taste for the varied and exquisite forms of fern life: a taste which is certain to have a softening and elevating influence on the popular mind. May these graceful and feathery forms crowd in vast numbers into our dwelling houses, our gardens, and our places of business, shedding their soft charms within the rude rough sphere of this hurrying, pushing, hard, and too practical modern life of ours. And if this little volume may be the means of shedding even the smallest additional ray of happiness on the path of those who may read it, the knowledge of such a result will be to the author the source of the most sincere and heartfelt satisfaction.

BRUNSWICK LODGE,

SOUTH HACKNEY,

March, 1875.

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KEY TO FRONTISPIECE.

1. Scaly Spleenwort. 2. Sea Spleenwort, (frond.) 3. Common Maidenhair Spleenwort, (frond.) 4. Black Maidenhair Spleenwort, (frond.) 5. Lanceolate Spleenwort, (frond.) 6. Rue-leaved Spleenwort, (portion of frond.) 7. Forked Spleenwort, (frond.) 8. Lady Fern, (branch of frond.) 9. Soft Prickly Shield Fern, (branch of frond.) 10. Tunbridge Filmy Fern, (frond.) 11. Maidenhair, (portion of frond.) 12. Male Fern, (branch of frond.) 13. Prickly-toothed Buckler Fern, (branch of frond.) 14. Marsh Buckler Fern, (branch of frond.) 15. Hay-scented Buckler Fern, (branch of frond.) 16. Mountain Buckler Fern, (branch of frond.) 17. Common Polypody, (frond.) 18. Mountain Polypody, (small leaflet of frond.) 19. Three-branched Polypody, (pair of leaflets on branch of frond.) 20. Hard Fern, (barren frond.) 21. Royal Fern, (leaflet of branch of barren frond.) 22. Moonwort, (leaflet of barren frond.) 23. Adders-tongue, (barren frond and seed-bearing spike.) 24. Bracken, (portion of frond.) 25. Brittle Bladder Fern, (branch of frond.) 26. Broad Buckler Fern, (small branch of frond.)

Part I.

FERN LAND.

INTRODUCTION.

INTRODUCTION.

GIVEN the free air which, with its buoyant and life-giving power, roams in sweetness and purity over mountain and plain, hill-side, meadow, and stream, and wherever the free gifts of Nature, far away from the habitations of man, abound in spontaneous luxuriance. Given the sight of a river as it rolls through the valley from its mountain home, fresh from dews and vapours, unsullied by contact with towns and cities ; or of a streamlet whose smaller volume winds its silvery thread through the moorland. Given the sight and sound of the gurgling brook, as it babbles and sparkles over stones and shallows, meandering by copse and through mead. Given the wild paths of the wood through which to wander free and untrammelled,

surrounded by the wealth of glorious trees, soothed by the soft sounds of insect life, and charmed by the songs of birds. Given the sweet gifts of plants and shrubs, of grass and flowers, clothed each and all with rich and beautiful tints : gifts which the all-wise Creator has spread out upon the earth with a splendid liberality, offering them alike to rich and to poor. Given, we say, all these choice things, together with a healthy mind in a healthy body, and he who has them possesses the elements of physical enjoyment.

But all cannot share such enjoyment. To some, Nature is like a sealed book ; and these cannot sip from the cup which, overflowing with pleasure, she holds up as a free gift to mankind. Pent up, perhaps, in the heart of a great city, walled in from all that is beautiful in Nature, their eyes are never gladdened by the sight of woods, green fields, and sweet wild-flowers ; their ears are never charmed by the songs of birds that roam free and untamed among their native covers. To them the fresh breeze laden with soft perfumes never comes. Hard toil in city workshops, squalid homes in city

slums, privation and suffering of every kind, are their lot. Others there are—dwellers also in towns and cities—who can at times, though rarely, snatch a few hours from their toilsome labours for a brief glimpse at the beautiful in Nature. Others again there are who can devote longer periods to the relaxation and enjoyment afforded by a ramble across country meads and through country lanes, by the silvery waters of the flowing brook, and through the shady woodland.

There are still a great many others whose opportunities for enjoying the country are unlimited. Time and money are at their disposal, and if they do not live in the country, they can at any time and at any season transport themselves thither. To each and to all, to the rich as well as to the poor, and to one no more than to the other, God offers the bounties of the natural world. But how different are the degrees of appreciation of these bounties on the part of those who share them! How keen is the enjoyment of those who can find—

“ Books in the running brooks,
Sermons in stones, and good in everything !”

The book of Nature is indeed beautiful to those who can read it ; but those who cannot read it all can read a part of it. Some of its stories are full of sweet simplicity. Page after page can sometimes be turned, and the reader will encounter nothing to dismay him ; nothing even to puzzle him. But the simple study of Nature is too frequently made a hard task by those who profess to teach. Botany is one of the most beautiful of natural studies, because it tells us all about the glorious vegetation which springs up from the earth.

Yet are there not thousands who do not understand botany ? To some the study is too difficult. Others can find no opportunities for pursuing it. But all would like to know something of the beautiful vegetable world ; something less—less formal, less difficult—than what is usually to be found in books, and something more than can be learned from the mute language—eloquent nevertheless in its muteness—of the plants themselves. Why is it that so few attempts are made to render popular the study of plants ? Our artists on paper and canvas attempt to reproduce the gorgeous colouring

of Nature's garments. Why cannot our writers give us word-painting in their description of plants, instead of using only the unpoetic language of science? Why cannot more of the grace and beauty with which the Creator has endowed the natural world be reproduced in books?

Amongst the most graceful and beautiful of the many lovely forms of vegetable life are the ferns. Of plants they are the least prosaic. Representing the beauty of form as distinguished from the gorgeousness of colouring, they are endowed with a tender and romantic grace. To study them is one of the most popular of pursuits, to cultivate them has become a popular passion. But thousands more would be added to the great host of fern-lovers if fern-literature were not so difficult to understand, and so unattractive.

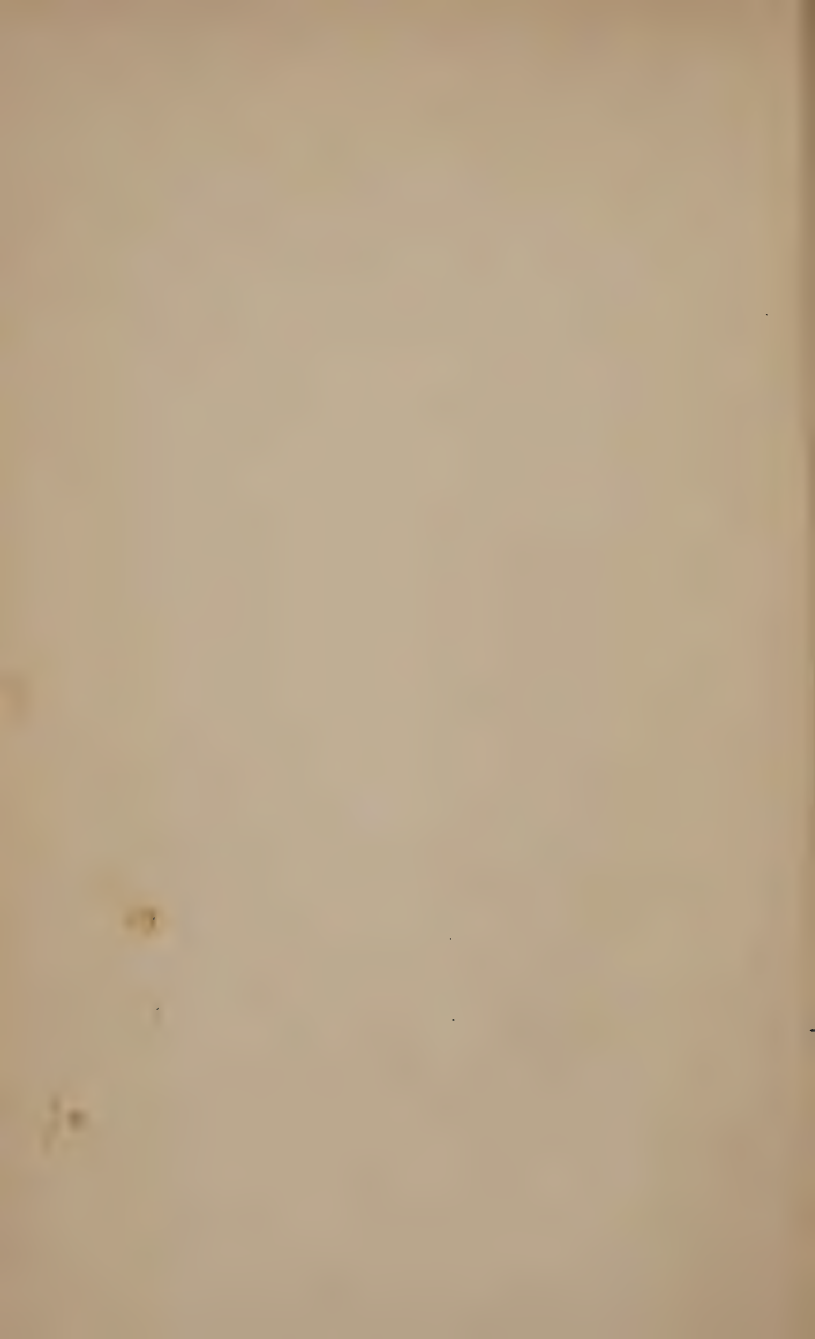
The tourist makes a dive into a country lane. Charmed with the varied and glorious forms of fern-life which he meets, he resolves to study the objects which have had so pleasing a fascination for him. He obtains a fern-book; but after reading two or three pages he wearily throws it aside.

Should it chance to contain coloured engravings of his favourites, he may linger for a few moments over it ; but when he has once scanned the artist's efforts, he has seen all that he desires to see.

It is the old story. The language of science, as generally rendered by our scientific writers, is a language for the few, and science will never be popular until it is popularly taught. "The language of flowers" has been taught ; cannot an attempt be made to teach the language of ferns ?

These beautiful plants seem to be especially designed for universal cultivation, for even the tiniest of the species in each of the numerous wonderful and exquisitely formed seed-cases concealed at the back of its fronds bears countless myriads of seeds. The common kinds of ferns—common only in the sense of being plentiful—are to be found almost everywhere ; but the home of our native ferns is Devonshire—"the Garden of England."

FERN LAND.



CHAPTER I.

FERN LAND.

AMIDST all our English counties, Devonshire stands unrivalled for the exquisite loveliness of its scenery. Few of those who have climbed its bold heights, crossed its rugged moorlands, and wandered through its shady woods and its delightful green lanes, will be inclined to dispute this assertion, however familiar they may be with English landscapes. It is the marvellous variety of its scenery which constitutes the peculiar charm of this county—the rugged boldness of its many hills contrasting with the soft grace of its valleys. Its majestic coast-lines tower grandly up against the sky, both on its north and on its south seaboard—now frowning with barren but lofty grandeur at the waves, now clothed from the highest

point of the cliff to the water's edge with one deep dark mass of vegetation. But there is not even a grand monotony in the lines of noble cliffs along the coast of Devonshire. There is no monotony at all, for the grand rocks sink at intervals, to give place to magnificent bays, which sweep gracefully from cliff's point to cliff's point, and help to fling over the coast scenery of this, the most beautiful of English counties, the same aspect of variety which is its most charming characteristic.

Those only who have explored the Devonshire coast along the Bristol Channel on the north, and along the English Channel on the south, and who are also familiar with the interior of the county, can properly realise the extreme magnificence of its landscapes. But we believe that thousands of the tourists who annually visit the western "Garden of England"—for Devonshire well deserves that name—whilst deeply impressed with the general loveliness of the county, nevertheless find it difficult to explain what it is that lends the peculiar character of softness and grace to the scenery. Here is the secret. The whole county is richly and luxu-

riantly clothed with ferns. The number and variety of the most exquisite forms of these beautiful plants to be found in Devonshire are equalled by those of no other county in the United Kingdom. Devonshire is emphatically the "paradise" of the British ferns. There they are in very truth at home. The soil and the air are adapted to them, and they adapt themselves to the whole aspect of the place. They clothe the hill-sides and the hill-tops; they grow in the moist depths of the valleys; they fringe the banks of the streams; they are to be found in the recesses of the woods; they hang from rocks and walls and trees, and crowd into the towns and villages, fastening themselves with sweet familiarity even to the houses.

Devonshire abounds in warm, moist, and shady nooks; and ferns delight in warmth, moisture, and shade. Though they love the warmth, they avoid the sun, and when accidentally exposed to its full influence, their delicate fronds become shrivelled and discoloured. Yet these beautiful plants do occasionally coquet with the tiny sunbeam which may perchance find its way through some crevice

in their cool rocky home, or through the thick foliage of the hedge-row under whose darkest shade they love to grow. But even the ferns are changeable in their moods, and fickle in their attachments, differing from one another in their habits and modes of growth. Some members of the lovely family will boldly grow in situations where, perched on rocky corners, away from the cool shelter of overhanging shrubs, they are exposed to the full blaze of the sun, and roughly blown upon by the wild force of the wind. Others only seek to bathe the tips of their delicate fronds in sunshine, hiding all beside under damp masses of foliage. Others again will bear the sunlight if they can just find a refuge for their roots in the damp hedge-bank, in the moist crevices of walls and ruins, or amidst the interlaced branches of trees. There are others still which hide where not even the tiniest ray of sunlight can pierce the dark retreat which they choose, and where they can revel in soft and humid warmth. But all ferns, even the sunniest of the modest family, love moisture and shade the best, and though they will sometimes grow in the full

sunlight, become developed into their most mature forms in cool and shady situations.

It is, then, the beautiful and unrivalled forms of fern-life which fling over Devonshire scenery its almost indescribable charm. Peer at low tide into yon dark and dripping cavern which yawns upon the sea! The bright sunshine that dances upon the rippling waves pauses at the cavern's mouth, as if not daring to penetrate its gloomy depths. But just one tiny gleam of light has ventured to cross the threshold, and sparkling on the dripping water, it flashes through the opaque blackness a kind of electric light. As the water falls, drip! drip! into the pool below, the light increases, and then—oh, glorious sight!—you see at the side and on the roof of this lonesome sea-cave the beautiful Sea-spleenwort (*Asplenium marinum*), hiding its roots in the cavern-walls, and spreading out its bright green and shining fronds, that they may luxuriate in the dark humidity of its chosen retreat. Or peer over yonder cliff, whose inaccessible sides overhang the seething waves! Look closely into the shady cleft which nestles under

yon projecting spur ! There you may see, far out of your reach, one of the most rare and exquisite of the British ferns—the Maidenhair (*Adiantum capillus-veneris*). Could you venture near enough to grasp it in your hand, you would indeed recognise that it is one of the most beautiful of plants. Its fine black wiry frond-stems, like a dark maiden's hair—it is most appropriately named,—rise in clusters from its crown, the main frond-stems being branched with smaller and more beautiful hair-like stems, which bear upon their tender points the delicate light-green fan-shaped leaflets.

Wandering through the cool lanes of Devonshire you may, too, meet with the fragrant hay-scented Buckler Fern (*Lastrea æmula*), which emits so beautiful an odour when pressed in the hand ; with the delicately and transparently-leaved Marsh Buckler Fern (*Lastrea thelypteris*) ; with the Mountain Buckler Fern (*Lastrea montana*), whose silvery fronds make the air fragrant when you tread upon them in their incipient unrolled state. But these varieties are not to be commonly encountered in every Devonshire lane. And still rarer—though

found in Devonshire—are the Lanceolate Spleenwort (*Asplenium lanceolatum*), the tiny Forked Spleenwort (*Asplenium septentrionale*), the Tunbridge Filmy Fern (*Hymenophyllum Tunbridgense*), and Wilson's Filmy Fern (*Hymenophyllum Wilsoni*). The Moonwort (*Botrychium lunaria*), and the Common Adders-tongue (*Ophioglossum vulgatum*), are also ferns of Devonshire growth. We do but enumerate these, and pass on to speak of some of the ferns which may be seen in almost every Devonshire lane, and which, although common in the sense of being plentiful, are nevertheless amongst the most beautiful of the British ferns. Yet beautiful as are the varieties of which we shall speak, they are within the reach of all who may choose to gather them, and that is our reason for devoting especial attention to these varieties.

Gentle reader, will you follow us in imagination whilst we endeavour to describe to you some Devonshire lanes which are familiar to us? And please remember that, exquisitely beautiful as they are, they are nevertheless but types of thousands of other lanes that the ordinary tourist may find for

himself, in his rambles after ferns in "the Fern-paradise" of England. When we have attempted to describe these lanes, and have noted the ferns which we shall find in them, we will try to show you how every one may have in his own home, wherever that may be, a real "fern-paradise."

A PARADISE OF FERNS.

CHAPTER II.

A PARADISE OF FERNS.

A WAY into the heart of a Devonshire lane! The time is midsummer, and the hot sun is pouring down his rays with burning intensity. But in yonder lane trees on each hedge that bounds the narrow pathway shoot up against the sky, and folding over at the top, shut out with their glorious masses of leaves the fiery heat. Beneath, the coolness is delicious, and the verdant foliage which bounds the view on every side, tempts the enamoured tourist to plunge into the depths of this cool retreat. But the walk through it must be a saunter, because its many and varied forms of fern-life should be examined to be enjoyed.

We will not generalise. We will paint no imaginary picture, but we will just describe our own

impressions of two Devonshire lanes which, amongst scores of others, we recently visited during the summer. We might be pardoned for giving a glowing description of the scenery of our native county; but ours will be no "glowing" description in the sense in which the word is used to mean exaggerated. No verbal description can accurately convey to the mind a fair and true picture of the exquisite loveliness of the green lanes to which we refer. The most brilliant word-painting would pale before the reality. Roughly, during our summer visit to Devonshire, we noted down our impressions of what we saw, and we will endeavour to reproduce those impressions on paper.

We must premise that, although the town in South Devon, of which we would speak, can of itself claim no especial notice, the scenery in its neighbourhood is surpassed by that of no other part of Devonshire. It is on "the English Rhine"; for the Dart is the only English river which can claim that high distinctive title.

From the brow of a hill whose summit, about a mile from the town, commands a magnificent

prospect of hill, dale, and river, two lanes run down, uniting in a point at the hill-top, but spreading away from each other as they sweep downwards towards the river's brink.

On leaving the town in the vicinity of the Quay the road turns round to the right, passes between high moss-covered walls, and after a short and sharp ascent for a few yards, suddenly wheels round to the left, and narrows into the dimensions of a lane. Turning for a moment before continuing the ascent, we get a lovely peep of the cluster of houses lying just a little below us, with the church spire rising grandly up in their midst.

Now—wending upwards—the path narrows still more between high hedges which rise on each side. Two or three more graceful bendings to right and to left, and then our lane suddenly widens as if to invite the tourist to pause in his ascent, and turn round.

The view will well repay a look, for a charming sight is spread out below—hill-side and valley, town and river.

Upwards—narrowing as it goes—winds the lane.

And now, for a moment, the bright valley which we have left below us is forgotten in the new sight which refreshes the eye. Hitherto the sunlight has shone upon the path; but here our lane becomes suddenly darkened as it creeps under the shadow of higher hedge-banks, and of overhanging trees. Just one glance through a breach in the shady mound which helps to shut out the sunshine, and the eye will catch a lovely glimpse of the hill-side sloping down into the valley below. The bright peep charmingly contrasts with the dark depths of the lane. But in this dark and cool retreat fern-life is predominant.

On the right the thick hedge is covered with an almost impenetrable mass of bushes, which rise high above its top, shedding upon it the dimness of evening twilight. Growing out against the dark background of bushes are some luxuriant specimens of the Common Hartstongue (*Scolopendrium vulgare*), one of the most easily recognisable of the British ferns, with its crumpled tongue-shaped frond, growing sometimes to the length—stem and frond together—of three feet. The thick and rich-looking

yet leathery texture of the fronds of the Hartstongue, with their deep and shining green colour, make them look exquisitely cool and refreshing, rising up out of the dark hedge-bank as they do in thick and clustering tufts—sometimes almost erect, at other times gracefully bending backwards their shining leathery tips. . Underneath the curling tongue-shaped fronds, lie the curious rows of seeds (spores), whose rich reddish-brown colour beautifully contrasts with the deep shining green of the frond.

The Hartstongue is a bold free plant. You will find it growing almost everywhere in Devonshire : on the tops and at the sides of walls ; hanging from old ruins ; growing out from the sides of cliffs and deserted quarries ; dropping down its long green fronds into the cool and limpid water of road-side wells hewn out of the rock : often exposed to the full blaze of the sun, but always in such cases dwindled down to a tiny size. The Hartstongue is to be found in almost every conceivable form, from a tiny thing of half an inch in length, when growing on a bare dry wall, to a plant which is one rich thick

mass of delightful curling fronds, each one a yard long, when growing in a moist bed of leaf-mould in the dark recess of some hedge.

Far out of our reach on the top of the high hedge-bank, are some noble specimens of the Male Fern (*Lastrea filix-mas*), so called from its erect and robust manner of growth. From the crown, densely covered with rust-coloured scales, spring up a close circle of beautiful fronds, whose under surface is thickly covered with the scales which are so prominent a characteristic of this noble-looking fern. There it grows, perched shuttle-cock fashion on the top of the hedge, the points of its fronds gracefully turned outwards, its crown resting just above the surface of leaf-mould, into the depths of which its long fine roots are plunged. The whole plant rests under the cool shadow of the trees. For years this hedge-bank has evidently been left untouched, and the annual crops of leaves falling from tree and bush, have piled up on it a rich mass of pure vegetable mould, in which the ferns delight to grow.

In this same spot, and growing side by side with

the Hartstongue and Male Fern, are to be found specimens of two other of the large-growing species of the British ferns—the Broad Buckler Fern (*Lastrea dilatata*), and the Soft Prickly Shield Fern (*Polystichum angulare*). Both, when finely grown, are most splendid objects. The former is one of the most handsome of our native ferns, its broad arching fronds sweeping upwards and outwards with exquisite grace, and sometimes attaining like the Male Fern, to which it is closely allied, a height of four or five feet. The chief characteristic of the Soft Prickly Shield Fern is the minute and beautiful manner in which its fronds are divided into small angular-shaped saw-edged leaflets. It is often densely clothed with rich brown scales, which contrast finely with the dark deep green of its fronds.

Turning now away from the dark shelter of overhanging trees, the pathway, wending upwards still, passes between high hedges, whose dark and tangled vegetation almost meets overhead. Here, shooting up majestically from the deep rich soil of the hedge-bank, are some Brakes (*Pteris*

aquilina). These are the giants of the British fern family, growing in their branching tree-like form to a height sometimes of ten feet. Peering into the dark depths of the hedges on either side, we discover trailing out of the close masses of ivy which encircle the gnarled and matted roots of the trees, the pretty fronds of the Polypody (*Polypodium vulgare*). The Polypody, like the Harts-tongue, will grow almost anywhere—on walls, in hedge-banks, and on trees; but it becomes a puny plant when growing in dry, hot, and exposed situations. It delights most to nestle amongst the twisted branches of the pollard-tree. There its creeping fleshy roots, feeding on the rich leaf-mould which collects in the crevices between the matted roots of ivy, love to hide, and from these moist nooks are sent out numerous tufts of bright green, narrow, lance-shaped fronds—a stem, a midrib with alternate lance-shaped leaflets, each leaflet mid-ribbed in its turn, and beautifully veined throughout; the round golden masses of spores—each mass collected in lines on the backs of the leaflets—giving to the plant a beautiful appearance.

Our lane still winds onwards and upwards, now widening as if to afford a prospect of the rich scenery lying below us, now sinking between high hedges, which get higher and higher as the steep path contends with the steeper hill. At length we reach the brow of the acclivity, and turning round, we can command one of the finest prospects in all England. Away straight below us lie clustering houses, beautifully embowered in orchards and fruit-gardens, with the church spire rising calmly up above the whole. On the right of the town, still away below us, the eye delightedly rests on a wide extent of undulating meadows and tree-covered uplands. Beyond, the wooded uplands rise steeper and steeper, until in the dim horizon a line of lofty hills, looming grandly up against the sky, bounds the view. Far away in the same direction, the sunlight is reflected from the silvery stream of the Dart, where, flowing at the feet of two wooded hills, it brightly contrasts with the dark lines of trees.

To the left of the town, in the dim distance, are seen the wild moorlands stretching away far over the country. There the lovely Dart takes its rise,

expanding its tiny stream as it moves onward, until, swollen to a torrent, it roars through deep ravines, foams over rocks and boulders, and still coming on ! on ! by wood-crowned heights and smiling upland meadows, it rolls into sight. Everywhere too, as far as the eye can reach, there is a grand network of green lanes, giving a marvellous aspect of diversity to the whole scene.

Two or three steps from the brow of the hill whence this noble prospect is obtained, a turning round to the right will lead back to the town, through a lane which is indeed a veritable paradise of ferns. The narrow pathway winds downwards for a full mile between two tall hedges, whose topmost branches here and there meet overhead, forming a natural archway, so densely interwoven in some places as almost to exclude the daylight ; now widening sufficiently to form a delightful green vista, now narrowing until the hedges on each side almost meet, and there is only sufficient room for the tourist to brush between the luxuriant masses of vegetation which spring out from the hedge-banks. During one part of the

way the lane runs at the foot of a dark wood. Then continuing its course it seems almost to sink down into the depths of the earth, whilst high fern-covered banks rise on each side. For a part of the distance a limpid stream trickles down the declivity. The ground is literally carpeted with grass and wild flowers ; and everywhere, hanging out of the pollard trunks, densely clothing the hedge-banks, and growing along the edge of the trickling stream, ferns are to be found in countless numbers. In places where the path has been cut deeply through the soft slate rock, the high banks of the cutting rise upwards almost perpendicularly, excluding the sunshine ; and there, in the moist interstices between the soft fragments of stone, are numerous species of the rock-loving ferns, luxuriating most in places where the water is percolating through the surface of the embankment. Growing in positions where its tiny crown secures protection under some small jutting point of rock, is the little Wall-rue (*Asplenium ruta muraria*), a very diminutive fern, with pretty little fronds. It has a great love for rotten stone and mortar, and is often found growing on

the sides of houses. It is a very hardy little fern, and will thrive in the sunshine, but most loves moist and sheltered nooks.

Growing by the side of the Wall-rue is the beautiful Maidenhair Spleenwort (*Asplenium trichomanes*). Its fibrous wiry roots insinuate themselves into the crevices between the stones, and its crown throws up a dense mass of beautiful little fronds, with stems like shining black hairs, and with little bright green, round, saw-edged leaflets alternately placed on each side of the stems, along the greater part of their length. Following the downward course of the lane we come, in the most cool, damp, and shady places, upon numbers of the Lady Fern (*Athyrium filix-fœmina*), perhaps the most graceful of the larger British ferns. Its drooping feathery fronds are indeed, when finely grown, most exquisitely beautiful, and the entire plant forms the most conspicuous ornament of the places in which it delights to grow. It throws up its fronds oftentimes in dense tufts; but it is to be found in perfection only in very moist and shady situations.

Now, as we go downwards, we pass over a tiny stream crossed by a rude bridge ; and here overhead the tangled bushes again meet, throwing on bridge and stream a dark shadow. Down almost by the water's edge, revelling in the moist and shady situation, are growing innumerable little tufts of the Scaly Spleenwort (*Asplenium ceterach*). The Scaly Spleenwort is in truth a most lovely little plant. The upper surface of the simple saw-edged frond is dark green ; its texture is like velvet. Underneath, the surface of the frond is completely swathed in rich brown scales, where, snugly hiding, lie the spores.

Here, as we reach the end of this charming green lane, the exquisite grace and the exceeding loveliness of the scene appear to blend in one harmonious whole. We lean over the rude parapet of the bridge. Trees above us cast a cool shade upon all round and underneath them. Gurgling and sparkling along below us the brook babbles on its way ; now foaming in playful fancy over its tiny stones ; now smoothly resting in mimic pools ; now rushing down in a miniature cascade, as its bed

falls suddenly out of its smooth and even descent ; and finally, with a parting "gurgle," disappearing under the dark arch of the bridge. On all sides, growing out of the steep bank that bounds the brook, dropping from the moss-covered sides of the bridge, perched on the tops of the tiny boulders that peep out of the water, ferns drop the tips of their wavy fronds into the cool mirror-like surface of the stream.

Above, around, beneath us, ferns, ferns, a paradise of ferns !

FERNY RAMBLES IN SOUTH DEVON.

CHAPTER III.

FERNY RAMBLES IN SOUTH DEVON.

WHAT can be more delightful for the tired and jaded dwellers in our crowded cities after dragging on an unhealthy existence during the long winter months within the domain of bricks and mortar, than a swift journey away out of the smoke, the bustle, the din, and the worry of city life, in the joyous month of May? A swift journey it must be, so that the disagreeable surroundings of the town may be rapidly left behind and the loveliness of the fields and hedgerows may as rapidly burst on the tired eyes—tired, that is to say, of the stale sight of paved streets and tall houses, but eager, with an inexpressible eagerness, for the trees and green lanes of the country.

And if a journey anywhere to green fields and green trees be delightful, how much more intensely enjoyable it must be to speed away to the ferny lanes of Devonshire! How many of those, we wonder, who have never visited that exquisitely beautiful county, can have the smallest idea of the inexpressible loveliness of its green and ferny lanes?

Can we induce those who have never explored the "garden of England" to do so without delay? We will at least try. We have in a previous chapter explained that recently during a summer visit we roughly noted down our impressions of two charming green lanes in South Devon. Our notes were lightly jotted down and thrown together for two or three short magazine papers. But we determined to expand our fern papers so that they might reach the dimensions of a small volume. With this object in view we needed to obtain fresh materials, and in order that these might be of the freshest kind, other visits to the delightful lanes of Devonshire would be necessary. We therefore decided that

our plan of operations should be as follows. Selecting Totnes—perhaps the most beautiful spot in South Devon—as our head-quarters, we determined that we would from that centre explore some of the ferny lanes, streams, woods, and moorlands in its vicinity, naming the places visited, enumerating the ferns growing there, and giving descriptions of the scenery. No choicer spot for the passionate lover of ferns can be found anywhere in Great Britain than in the neighbourhood of Totnes, whose houses are picturesquely dotted about on the banks of the lovely Dart, the most beautiful river in all England. There are to be found ferns of many kinds, in every graceful variety of growth, exquisite in form and shading, and in countless numbers.

Totnes pays homage to the ferns. Everywhere in and about the little town these beautiful plants hold sway. How can we describe the place? We shall not even attempt any exact description. It is on a hill and yet in a valley. Climb the road that forms its main street, extending from the Dart Bridge which divides Totnes from

Bridgetown, to "the top of the town," and you will say that Totnes is built on a steep hill. But just climb through the delightful lanes which mount to Totnes Down Hill, and look at the lovely little town! It appears to nestle in the extreme depth of a valley. But the explanation is here: Totnes is built on the hillocks, and the hills soar above it. And these hillocks are charming, small as they look when viewed from the heights above.

Imagine a series of little hills, or rather a mingling of little hills and little valleys! Imagine a cluster of houses built upon this combination of hill and valley! Imagine an intermingling of paved streets and green lanes, of houses, delightful villas and fruit-gardens! Imagine walking out of old-fashioned streets filled with old-fashioned houses, into paved ways which seem to go everywhere, up hill and down dale, between high walls covered with wall-ferns, wall-flowers, and mosses! Imagine yourself walking along all sorts of terraced roads at every conceivable height above the river level—houses being above you, beneath you, around you! Imagine

bricks and mortar placed at a disadvantage in a contest with sites that are so charmingly rural as to make you feel that they could never have been intended to be built upon! Imagine, finally, a queer intermingling of town and country, with ferns growing on the houses and on the garden walls, and meeting you at every corner wherever you turn! Such is Totnes; and from every part of the little town—at the top, at the bottom, and on each side—you may get away into the most delightful country. Here is some description of a ramble from Totnes along one of the lovely routes which are spread out like network on every side.

About half way up the main street of the town, and within a few feet of the spot where, tradition says, Brutus landed—the sea then reaching to this elevated point on the hill-side—a road leads sharply round to the right. You are nearly midway on the hill, amongst the houses, almost in the heart of the town. But you may, as it were, dive out of it into the road aforesaid, which will suddenly lead you away amongst groves and green fields, woods

and streams, in the direction of the picturesque town of Ashburton. But three miles from Totnes, along the Ashburton Road, and three miles back again through Dartington Wood, will be a delight and a study of the rarest kind for the fern lover.

Just a short description of the delightful suburbs at this part of Totnes before we disappear under the canopy of green trees that in a few moments will shut out the pretty little town. We cross a brook which skirts a flower-bespangled meadow, and flows darkly on by the side of a shady thicket. Then we plunge under a grove of elms, and emerging from these catch a fine view of church, castle, and town, sweeping upwards to the left along an upland, on which orchards and fruit-gardens also nestle. Then we near the railway station, and are greeted by the "puff" of a passing train on crossing the railway bridge. One moment more, and town and railway are hid from view as we get away into the green and winding road to Ashburton. A little further on we mount a hill, and turning round we may catch a last peep of the

town nestling down a little below us, the houses just seen between the leafy interstices of the arching trees which overhang the road we have already passed. High up in these same trees the blue sky peeps at us through an opening, the blue being however momentarily obscured by the steam which is puffed up from the station yard. Such little incidents are somewhat trivial, but the tourist knows how much life they sometimes add to a scene. They in fact make up much of the difference between the picture and the reality. A town without motion or sign of human existence would be dull and uninteresting to look upon, however picturesque it might otherwise be; and trees and fields and streams without moving life, however rich in colouring and grand in aspect, would lose more than half their charms. But we must not digress.

About a mile from the town our road commences to skirt one side of the Dartington Wood on the right. The sun is shining brightly, but at this spot arching trees on each side of us envelop the path in dark shadows. A little distance

further on, we reach a point in the road where a rushing stream comes out of and flows for some distance by the side of the wood. The scenery at this spot is beautiful almost beyond description. All who admire sylvan loveliness should visit it. A rude rustic bridge crosses the stream and gives access to a narrow, steep and winding path which leads up into the dusky recesses of the wood. When we travelled the route we are describing, it was May. On the right of the rustic bridge, and almost overshadowing it, a large hawthorn bush was white with blossom, and scented the air all around with its delicious fragrance. Below us, the stream was rapidly eddying, waving the weeds and wild growth that sprung up from its bed. Just in front, a sudden fall in the level of the stream caused the gurgle and foamy splash of a tiny waterfall. A sloping bank led down on the right from the road to the water's surface, covered—in such splendid luxuriance as is everywhere to be seen in Devonshire—with tall, rich, delightful green grass intermingled with the dark green fronds of the Hartstongue, and the handsome

shuttlecock-shaped fronds of noble specimens of the Male Fern. The left banks of the brook hung far over the water, the bushes, ivy, and moss-covered branches of trees which crowned them affording cool, dark, and moist nooks for the ferns, whose exquisite fronds, dropping gracefully over the stream in splendid clusters, lapped it with their beautiful tips.

Beyond the bridge the stream flows for a short distance under the dark shadows of the wood, winding, falling, splashing, and foaming as it hurries along out of sight. The peep in this direction is delightful. Trees above,—moss-covered, ivy-covered branches; some gnarled, and others fresh and vigorous: trees on each side, all densely clothed with their fresh and glorious May dress. The clear brook reflects the shadows of trees and shrubs, and becomes dimly seen as it disappears under the dark vista of the wood. This vista, formed of the delightfully intermingled branches of the trees overhead, presents the most charming peep. The matted branches, green limbs and twigs, would fairly exclude the light, were it not

that at the darkest and densest part of the canopy slight openings afford a view of the sky, and whilst they admit the softened sun-rays, give the prospect of a beautiful wood-crowned hill, rising upwards beyond the delightful canopy; which hangs so gracefully over the clear and glancing waters of the brook.

For some little distance the stream runs by the side of the road we are following, until when the latter takes a sudden turn to the right, it disappears under a stone bridge, re-appearing for a brief space and then being finally lost as it flows away across the meadows. Peer over the side of the bridge and you will find little tufts of that beautiful fern, the Common Maidenhair Spleenwort; also the tiny Wall-rue, and small specimens of the Hartstongue. You will rarely find a Devonshire bridge, unless it be quite a new structure, without its complement of ferns—the rock, or stone-and-mortar-loving species. Whether it be a river bridge, or a tiny arch that crosses a brook, its sides are almost certain to possess at least one kind, often many, of the moisture-loving plants. No doubt it

is the moist atmosphere produced by the flowing water underneath which gives encouragement to the ferns. Sometimes a river arch is densely covered with many varieties of ferns. You will often find the Polypody, the Hartstongue, the Wall-rue, the Scaly Spleenwort, the common Maidenhair Spleenwort, the Black Maidenhair Spleenwort, growing together on bridge sides. But the specimens of Hartstongue are invariably diminutive when growing on walls, rocks, or bridge arches. The Black Maidenhair Spleenwort, unquestionably one of the most beautiful of the fern family, is also usually found to be stunted when growing on the bare open side of a rock, wall, or bridge arch. It nevertheless delights in stones; but then the stones and rocks must be in the shade, and covered by overhanging bushes. A little way from the stone bridge already mentioned, on the road between Totnes and Ashburton, in the slate rock side of a hedge-bank, we caught sight of a tuft of the Black Maidenhair, growing in a conspicuous position. We felt persuaded that other specimens would be near. One portion of the slate

rock was hid by bushes that closed over it. Pressing these on one side, we found as we had expected an unusually fine plant of our Spleenwort, its roots being firmly imbedded in the layers of slate rock, which were kept cool and moist by the shelter of the bushes. Where this fern is to be found, you will always find the largest and most luxuriant specimens in the darkest and dampest corners. No fern shuns the light more than the graceful and beautiful *Asplenium adiantum nigrum*. It is a great favourite of ours, and cannot, we think, fail to be admired by all fern lovers. It is hardy too, and will well repay in cultivation a very small amount of care and attention.

It is astonishing how many delightful green lanes abut on to the high roads in Devonshire: lanes so temptingly beautiful that you feel you cannot pass without exploring them, for, at least, some little distance. We espied such a lane when, on the road we are describing, we reached the top of the hill, on the other side of which lay Staverton Bridge. This lane turns out of the road on the right, and we explored it for a short distance.

A few yards from the entrance, a bend in the lane hid its further course from view. But the peep just where it disappeared was charming. The overhanging trees, the lovely hedge-banks, and the carpeting of grass and wild flowers, all lent a peculiar and shadowy grace to the vista between, forming what may not inappropriately be styled a sort of verdant twilight. On the fresh green hedge-banks near us were numerous specimens of the Male Fern, the Harts-tongue, the Soft Prickly Shield Fern, and small plants of the Bracken, delightfully intermingled with ivy, moss, and wild hyacinths.

A little further on the road we found the tops of the hedges on each side crowned with numberless tall specimens of the Bracken, and presenting a peculiarly graceful and beautiful appearance. At a short distance from this place, the road suddenly descends as it bends sharply round to the right. At this point a beautiful view of the valley lying below on the left, with its wooded bottoms, its orchards, and its meadows is revealed; here and there houses picturesquely dotted about,

and away in the high background the green hills. Immediately next the road, and on the first slope of the descent into the valley, there was a small orchard, in which the Brakes grew so thickly and luxuriantly as to touch the tips of the fruit trees, and give a most singular and romantic aspect to the scene.

Now the view again changes in true Devonshire fashion as we pass onward; our road rapidly descends; Dartington Wood rising high on the right, and a low thicket spreading away to the left, under the moist shadow of which some of the commoner kinds of ferns grow plentifully. Lower still goes our road, whilst trees on each side rise higher and higher, overlapping at the tops. In a few minutes we emerge from their shadows on to Staverton Bridge, and the lovely scene changes once more. Here the stream of the beautiful Dart darkly and quietly flows under the curious old arches of the bridge. In midstream, on the left, there is an islet clothed with dwarfed shrubs. Over an upland on the left bank of the river, trees sweep grandly down to the water's surface.

The Dart is seen in this direction only for a short distance before it winds away on its course. From the point where it is lost to view the eye delightedly roams over the hills which bound the horizon. On the ivy-covered sides of Staverton Bridge may be found many fine specimens of the beautiful Scaly Spleenwort, the larger ones placed, however, where they are somewhat difficult to obtain, without some amount of skilful management. The pretty little Wall-rue is also to be had here, and the bridge parapet and sides are also ornamented by the fronds of the common Polypody.

And now to return to Totnes through Dartington Wood, we must retrace our steps for about 200 yards, until we reach the edge of the wood. Here a gate admits us on to a steep ascent, at the top of which we enter a bridle path which leads away round to the right, under the dark shadow of the trees. Presently we are fairly buried in the wood, the trees in which rise high on each side of our path and arch over us. From the left comes the roar of the unseen Dart, as it rushes by somewhere on the verge of the wood. Under the copse on the

same side are some splendid ferns : grand specimens of the Broad Buckler Fern, of the purple-stemmed Lady Fern ; Male Ferns in abundance, many of them standing four feet high ; and numbers of the Hard Fern, finely developed. The luxuriance of the ferns in this part of the wood is no matter for surprise ; for the ground consists of soft, spongy, leaf-mould, a soil in which the fern family mostly delight. Leaving the wood we pass across an open meadow ; and then for a long distance we skirt a park wall, where, under the shadow of overhanging trees, grow the Scaly Spleenwort, the Wall-rue, the common Maidenhair Spleenwort, the Black Maidenhair Spleenwort, and small specimens of the Harts-tongue. From this wall the path follows on through the grounds of Dartington Hall, and pursuing it, after getting some delightful peeps of wood and river scenery, we find ourselves again at Totnes.

THE FERNY MOORLANDS.

CHAPTER IV.

THE FERNY MOORLANDS.

THE grandeur of the Devonshire moorland scenery almost defies description. The fern hunter, searching for his favourites amongst the ferny haunts of the "fern paradise," will derive the keenest enjoyment from a ramble on the moors. Away from the town on the mountain side, with the free blue sky overhead, surrounded by wooded steeps which descend swiftly to the valleys below! Or away in those valleys where the boulder-strewn beds of the rushing moorland streams send forth their wild music to the delighted ear: wandering from hill-side to valley, and from valley to hill-top, drinking in with that inexpressibly acute sense of pleasure which the jaded town dweller can alone experience

in its full perfection, the enjoyments which are alone to be found where—

“ Boon nature scatters, free and wild,
Each plant or flower, the mountain’s child ! ”

From Totnes to Newton Abbot; then on to Teigngrace and Bovey, and thence away by Lustleigh, to the borders of Dartmoor and Moretonhampstead. Following this route, we one day made for the moors, in order to explore the ferny borders of Fingle Bridge, of Lustleigh Cleave, and of Horseman’s Steps. It is, indeed, a grand series of views which that route presents; and a great and glorious wealth of ferns, in varying hues of exquisite green, will reward a careful search.

The line from Totnes to Newton runs through a series of deep cuttings through the hills. Now the high sides of the cuttings shut out the sky: now a tunnel shows that the sudden rise in the hills, which lay in the path of the railway, had made an open cutting impossible. As we are about to emerge from the darkness of the tunnel, we may see under the moist shadow of the arch

the deep, dark, shining, green fronds of the Hartstongue. Or we may espy specimens of the Black Maidenhair Spleenwort, of the Wall-rue, or of the Common Maidenhair Spleenwort. Now the light increases; but fields and hedge-rows are still shut out by the steep sandstone and slate rock, from which, however, high up above our heads cluster and peep out numerous ferny tufts, looking freshest and greenest where, from the high level above, some trickling moisture falls over the steep rock. Then, for a moment, the high land appears to recede as the train rushes through some gorge, leaving hill and cutting behind, and revealing to the eyes of the delighted passenger the wood-covered and ferny valley, or the fern-covered upland slope. A railway is seldom suggestive of fern-land. The hourly rush of traffic, for passengers and "goods," reminds one unpleasantly of the town, and of its hurry and bustle. The railway—to the lover of nature—mars the free wild aspect of the woods and fields. But nature conquers everywhere in Devonshire. Even its iron-lined roads are subdued by the soften-

ing influence of plants and shrubs. The ferns especially resent the intrusion of the railway engineers.

Dry, hard, bare cuttings may be made through the hills; the turf, heather, and wild Brakes may be stripped off along the valleys; the lines may be laid down, and everything done to make the scene look as commercial and uninteresting as possible. But the spontaneous influences which produce vegetable life will overcome all this. The rain comes down, and on to the softened earth the grass seeds blow. Thistle and dandelion will send their germs in light and airy chariots, and fern spores in countless numbers will find their way where the navy has ruthlessly stripped off the verdant carpeting to make room for the iron roads. Nature, indeed, everywhere more or less asserts her sway, and clothes our roads and railways with her charming dress; but it is especially the ferns with which roads and railways have to contend in the charming county of Devon—the ferns which carry everywhere a soft and indescribable grace. You will always have time to enjoy the lovely

peeps of fern-land which are to be obtained between Totnes and Newton; for the steep inclines necessarily render the eight miles of railway journey between the two places unusually long.

Changing trains at Newton, on our way to the moors, we were not long in getting to our point of departure at Moretonhampstead. On this branch line, twelve miles in length, the changing scenes are supremely beautiful. During the whole distance the line passes along a valley which is preeminently Devonian. It is curious and interesting to watch in the early summer the gradual substitution of the barren moorland for the cultivated tract. Grand slopes of rich greenwood, flower-dotted meadows and June corn-crops standing proudly up, with rich promise for the autumn—the light waving green of the stalks and ears charmingly contrasting with the red and full blown poppies, which are scattered in patches here and there—first meet the eye. But the cultivated land is shorn of no picturesque surroundings: hill, wood, and river, each with its peculiar Devonshire charm, intermingle in rich and varying proportions, fling-

ing their characteristic grace over the whole. As we advance, however, cultivation becomes sparse and sparser still. The heights become too steep for anything but their own wild growth. There is, however, even until the unbroken moor is reached, a grand intermingling of wooded and barren steeps, of hilly corn-fields, and heather and fern-covered heights. Then we pause at the extremity of the branch line to Moretonhampstead.

Now begins the moorland walk, extending away for some three or four miles to Fingle Bridge. Along the entire distance there is spread out for the fern-lover a continual feast. For a short way the path winds by the side of a meadow, then crosses, at the end of a small thicket, a fern-fringed brook; then ascends a steep upland, and then for two miles it takes a course which includes all the wild and varied beauties of moorland scenery. Now the interchained peaks of Dartmoor carry the eye away over a grand stretch of country, the vividly-coloured landscape losing in freshness, but losing nothing in grandeur, as the dimness of distance causes it to melt away

in shadowy outlines. Now the eye rests on the graceful scenery which lies immediately contiguous to the path: huge boulders scattered about on each side, clothed with moss and ferns; rugged hedge-banks formed of slate rock and red sandstone teeming with fern-life; slopes of furze and heather intermingled with wild flowers. Now the path descends the hill-side and traverses and lights on a glade strewn with boulders of all sizes and shapes, forming a natural rockery, and giving congenial shelter to the roots of the Bracken, whose tall fronds are spread out with a wild grace which no word-painting can adequately represent.

Along the route which we have indicated, the fern-hunter may find, in charming variety, the Common Polypody, the Soft Prickly Shield Fern, the Male Fern, the Broad Buckler Fern, the Lady Fern, the Black Maidenhair Spleenwort, the Harts-tongue, and the Hard Fern.

Few sights can be more grand and imposing than the view which is to be obtained shortly after commencing the descent—a mile in length

—which sweeps by a winding path down towards the vale of Fingle Bridge. You have to descend the densely wooded side of a hill, and the path along nearly the whole way is overhung by trees. Peer under the dense wooded cover that extends on either side of the path, and you may well admire the splendid growth of the ferns that revel in the humid shelter of the greenwood.

Following the downward course of the steep path, a clearance in the trees and a jutting point of the hill suddenly give the opportunity for a sight which is sublimely magnificent. You stand on the height far above the vale of Fingle Bridge. From your feet, down to the extreme point of the narrow valley, sweeps a dense mass of trees, gracefully curving round to the left, until it is almost met by the lofty wood-covered hill that rears up grandly against the sky on the opposite side of the valley. We have said that the grand and wood-covered, wood-crowned heights almost meet: their bases interlace; but a clear space intervenes between their tops, giving a marvellous combination of

varying moorland scenery in the vista between. Hills—some densely wooded, others bare and wild—interlace their tops in a symmetrical network, which stretches away until dimly defined in the far-off distance. On the right, in varying terraces which rise towards the sky, is a mixed landscape of meadow and hedge and tree. Down far beneath, rushing along under a dark overgrowth of trees, roar the waters of the Teign, just seen away to the left, where a break in the canopy of overhanging trees reveals the dark and foaming current.

Winding round and round to lighten the roughness and steepness of the descent, the path at length reaches the extreme point of the valley, and crossing a swift, dark mill-stream, that runs for a short distance parallel with the Teign, emerges on to Fingle Bridge. This spot is, indeed, a chosen land of ferns. To the right and to the left, away from the arches of the bridge, the Teign brawls over and between the granite boulders which are strewn in its bed: now sparkling in pebbly shallows, now deepen-

ing into silent pools, now roaring in mimic fury over miniature falls, now calmly flowing by the silent banks, which, overhung with the deep green foliage of river-side shrubs, send forth their waving fern-fronds to lap the surface of the stream, and lend to it a graceful and beautiful aspect.

At a short distance to the right of the bridge the stream is lost from sight; but from its boulder-strewn, roaring bed the eye is naturally lifted to the glorious view which is to be seen overhead. On both sides, almost from the water's brink, rise two precipitous hills,—the one on the right, clothed with its dark green mantle, extending from the surface of the stream to the extreme hill-top, by the gradation of shrub and bush and tree; that on the left sparsely covered with furze and heather; but both endowed with a majesty of aspect, which lends a stupendous grandeur to the whole scene. Away to the left of the bridge a similar scene meets the eye; but here both hill-sides which bound the stream are densely and darkly clothed with trees, which, sweeping upwards, finely contrast

with the delightful blue of the sky, as the hill-top cuts the sheen. The blue sky, the green woods, the graceful waving ferns, and the brawling river, combine to make an exquisite picture.

After a peep at the bridge scenery, we followed a path which led down to the left, along by the river side. Huge granite boulders were scattered about in mid stream ; and some of these, clustered in the form of a rocky islet, and approachable by stepping-stones from the river side, offered a dry-shod passage for the tourist. Here on this boulder islet we rested for refreshment—the cool stream flowing on each side, gurgling and splashing and flashing in the sun, the calm surface of its silent pools, where the current was pent by the rocks, being broken only from time to time by the splash of the rising trout, as they dashed at the flies which skimmed the surface of the water. From this point, on the same side of the bridge, a path skirted for some distance the brawling course of the stream. We followed this path for some way. Such a walk as this might well repay the fern-hunter for a long journey across

rugged moorlands. It is really almost impossible to express in words the keen sense of enjoyment which is experienced during so delightful a ramble as this river-side path affords.

You thread a narrow path along a grassy sward. Beneath, the soft, verdant carpeting is thickly strewn with wild flowers; above you a delightful canopy formed of the interlaced branches of trees, through which the screened sunlight softly falls. On your right a high embankment, leading up to a higher path on the hill-side, from out of which hang tufts of fern-fronds, mingled in charming variety. Down to your left rolls the river, whose music joins in chorus with the songs of the birds, singing, you know not where, but everywhere around you. As you follow this charming river-side path, you have from time to time to press through the dense masses of shrubs which surround you,—now hanging down overhead, now springing out from the left, and now from the right side. The small, but startling, incidents of the route add a sort of piquancy to the enjoyment. The sudden flutter and the wild

cry of a blackbird, as it darts out of the tiny thicket where its nest is hid ; the rustle in the high embankment on your right, and the quivering of the fern-fronds, followed by the sudden flight across the path of a rabbit, or the rolling, hurrying, scurrying contortions of a snake, which your unexpected appearance may have surprised basking in the tiny gleam of sunshine which has fallen on to the greensward through an opening in the trees overhead ; the heavy splash in the river on your left, as a water-rat, which had not dreamed of your unwelcome intrusion, takes the shortest and readiest path to his hole, diving one moment in one place under the stream, to reappear the next somewhere else, under the belief that meanwhile you may think that his power of holding his breath is unlimited ; or the lighter splash of the trout, as, unaware of your presence, it rises in the dark, deep pool near you at the tempting palmer fly that has just dropped from the bushes. All these sights and sounds contribute to the delight of this river-side ramble. Or you may rest for a moment, and, peering cautiously around you, so

as not to disturb the free inhabitants of this woodland, admire and enjoy their unrestrained movements. The snake will wriggle on to the sunlit path again ; the rabbit will come quietly out from his hiding-place ; the rat will return from his hole ; the trout will skim about on the surface of the river close to where you are sitting, if your shadow does not fall across the sunlit pool. As you sit and rest, you may listen with a deep sense of enjoyment to the soft buzzings of the insects which surround you ; and watch the bushes, the grass, the ground, and the water. Everywhere there is life—fresh, delightful, enjoyable life.

Such a scene as we have attempted to describe is not imaginary. It is real and tangible. Who that has visited Devonshire has not experienced the varied and varying sensations of a ramble so essentially Devonian ?

After pursuing this river-side path for some little distance, we reached the waterfall, where a division in the river makes provision for the stream which drives the mill at Fingle Bridge. Close by the fall there is a light and open planta-

tion of small trees, and underneath these there is a tiny forest of ferns. The Brakes in glorious luxuriance clothe the ground; splendid forms of the Male Fern also abound in this wood. The dark stream which flows by the wood is fringed with the most beautiful specimens of the Lady Fern, of all sizes. There also is to be obtained the lemon-scented Mountain Buckler Fern. We saw a number of these lovely plants. It was no wonder that the ferns in this delightful grove were so luxuriant, for the soil consisted of nothing but spongy, sandy leaf-mould. The soft and exquisitely-beautiful scenery in, around, and above this charming wood it is almost impossible to describe. The ground covered with waving fern-fronds; on one side the foaming waterfall, on the other the river with its fern-fringed banks; above, the interlaced tops of the trees in the grove, through which might be seen the grand wood-covered hills which shut in the prospect all round, and, towering up against the blue sky, seemed almost to fold over like a delightful canopy, with a grandeur that cannot be described.

From Fingle Bridge back to Moretonhampstead, along the intricate moorland path. From Moretonhampstead to Horseman's Steps, across four miles of delightful country, and through ferny valleys, up ferny hills, and through ferny lanes. This was our route on the day of our visit to the ferny borders of Dartmoor. You reach, near the Horseman's Steps, a solitary cottage, perched in a charming nook. Close by the cottage walls the North Bovey River, pent into a narrow bed, roars over the big boulders that choke up its course. Here you have the charming combination of waterfall, cascade, and silent pool. The huge masses of granite which are thrown down along this stream, are in many places delightfully carpeted with moss, whose deep and light-green colouring looks charmingly fresh where the limpid water flows over or near it. A short distance from this spot are the far-famed Horseman's Steps. The narrow course of the North Bovey River is here completely blocked up by enormous masses of granite, and you can only see the stream by peering down between interstices in the rocks.

But you can hear it thundering along in its almost subterranean channel. A small tract of marsh land intervenes between the Horseman's Steps and Lustleigh Cleave ; and here you may find, along by the course of the North Bovey River, numbers of the Mountain Buckler Fern, the Hard Fern, the Lady Fern, the Male Fern, the Broad Buckler Fern, and others. In this district is to be found the somewhat rare Tunbridge Filmy Fern, Wilson's Filmy Fern, and the delicate and beautiful Marsh Buckler Fern. From this point a precipitous ascent leads on to Lustleigh Cleave. We can give no better description of this Cleave than by comparing it to a huge fern rockery. By some singular agency, the hill-sides have been strewn with blocks of granite, of all shapes and sizes. It is really difficult to understand how this curious phenomenon could have been produced. Volcanic action of some kind naturally appears to the mind as the agency which must have been employed in the original formation of Lustleigh Cleave. But the present effect is singularly beautiful. Here, as elsewhere, the ferns have

taken possession of the ground, and have given an indescribably graceful aspect to the strewn boulders. Reaching the top of the Cleave, after a toilsome ascent, we made for the Logan, or Nutcracker Rock. Near this rock, peering into the stony crevices, we made a pleasing discovery. We found in one of the interstices, between the gigantic masses of granite which cover the hill-top, several specimens of the rare Lanceolate Spleenwort. They were growing in one little cluster, and in the dark shadow of their retreat we could not at first be sure that they were not the beautiful but common Black Maidenhair Spleenwort. We knew, however, that from the position in which they were growing, it was quite possible that they might be *Asplenium lanceolatum*. With the aid of a long stick, we succeeded in digging them out; and a close examination at once gave proof that the plants we had discovered were what we had hoped they would prove to be. The fronds of the Black Maidenhair Spleenwort are always broadest at their base, narrowing gradually towards their apex, the spores

being arranged in lines at the back of the fronds. The fronds of *lanccolatum* taper at both ends towards the apex and towards the *stipes*, and its spores, when ripe, are gathered in little round clusters on the back of its fronds. The distinguishing characteristics of this species were present in our "find." We had hunted in numberless places in South Devon for *Asplenium lanccolatum*, and had carefully explored several of its known *habitats*, but without ever being able to find a single plant. Those who have experienced it, know the pleasure derived by the fern-hunter when, after a long search, he at length lights on the rare variety for which he has been seeking.

Down the side of the Cleave towards Lustleigh; through a boulder lane—huge masses of granite piled up on each side, and almost hidden by ferns and moss—and away by hill-side meadow and stream towards Totnes! So ended our delightful ramble for that day across the ferny moorlands.

DOWN A GREEN LANE!

CHAPTER V.

DOWN A GREEN LANE!

DOWN a green lane! But what a lane! Words can but meagrely convey an impression of its charms. Nor could the most skilful artist, with the rarest combination of colours which art can produce, give a faithful representation of the glorious tints and of the unrivalled gracefulness of the ferns which revel there in all their native luxuriance. But how to reach this lane?

You make a steep ascent along an upland road a mile in length; an ascent so long and so steep, that could you make it without pausing, you would stop at the summit to recover your breath. But if you love scenery, and if you love the ferns, you cannot climb this hill without stopping to admire both, for both are of the rarest kind.

Arrived at the top of the hill, you have in front a park gate, leading to somebody's mansion, and two turnings for choice, one directly to the right, the other directly to the left. Both are charming, but the one to the right is irresistible. The left turning is a road; the right one is a lane. No fern-hunter who might reach this turning-point, when out for a saunter, would hesitate for one moment. The "lane" at its entrance is wider than the "road." On the left a grassy hedge-bank, over-topped by arching trees, which grow out of it, and bending forward, fling their green tops across the whole width of the pathway. On the right also a grassy hedge-bank topped by bushes—stunted but picturesque growths of the elder, the hawthorn, and the elm. A grassy carpeting under our feet, except where sacrilegious carts have made "ruts," and occasional foot-passengers have worn a narrow path. Moss-covered tree trunks, and inviting forms of fern-life, which crowd the hedge-banks; but ferns which are tender in growth, and small in size. From the hedge-banks shoot out the splendid flowers of the fox-glove,

mounted on their tall stems, and looking grand indeed in the height of their June glory. The lane, wide at its entrance, narrows rapidly, and at the distance of a stone's-throw bends round to the left, and is beyond that point hid from view. But so green and delightful are the trees, the flowers, the grass, and the ferns, that your choice of the turning is instantly made. You feel certain that the lane will get more beautiful as you follow what you are sure will be its winding course, and you make for the bend where that course is hid from view. Look at the hedge-banks as you pass from the short "bit" which has been described. Here are no less than six species of ferns—the Male Fern, the Hartstongue, the Soft Prickly Shield Fern, and the Broad Buckler Fern growing out of the hedge-bank ; whilst fronds of the Polypody peep out from ivy-covered pollard trunks, and are sheltered by the overhanging shrubs which line the hedge-top. Small specimens of the Bracken are also here. It is perhaps because of the sunny aspect of the hedge-bank that the fern specimens are small. Following the bend of the

lane, you find that the grass-covered pathway narrows, whilst the hedges close in; trees now, ivy as well as moss-covered, are on each side of you, and interlace their green tops. Then, between moss-covered, fern-fringed hedge-banks, you pass an open fir copse on the right. Then the lane, still winding round to the left, narrows more rapidly still; narrows indeed so much, that the bushes which crown its hedges almost meet overhead, and thus arresting the moisture and increasing the shade, cause the ferns on each side to become developed into grander forms, until two or three splendid specimens of the Broad Buckler Fern and the Male Fern in the hedge-bank on the right compel you to pause and admire their exquisitely graceful aspect. A few steps further on, bending still round to the left, you again stop to admire the splendid growth of a Brake, which, growing out of the humid hedge-bank, has reached a height of eight feet. Now the lane for a short distance observes a straighter and narrower course, between hedge-banks containing luxuriant specimens of

noble-growing ferns. Then it widens, and admits you on to a glade, whence away to the right from the hill-top where you stand, you get a magnificent view, far away over green lanes, woods, and meadows of the wild moorlands which end the landscape.

Now the lane suddenly narrows again ; but just as it is about to commence its descent over the hill, you suddenly come upon a turning to the right. A lane within a lane ! Lovely as is the course which you have been hitherto following, you pause at this spot fairly spellbound by the superlative loveliness of the little bit of scenery which this new turning suddenly reveals. 'Tis just a peep from where you stand ; for this lane within a lane seems to be a lane without egress, a charming *cul-de-sac*. At a few yards from the entrance, a hedge-bank bars the way, to all appearance. The tiny "bit," as far as you can see, is like a summer bower. The hedge-banks stand on each side some seven feet apart. But flowering plants and grass carpet the ground, leaving a pathway two feet wide. Away in front the bank which closes the view, gracefully clothed

with waving fern-fronds, rises up against the tall and matted shrubs from the hedges which run to meet it, and mingling its own wealth of green twigs with the branches of a small oak on the opposite side of the way, forms a delightful canopy of quivering leaves, through which the blue of the sky, and the fleecy white of the passing clouds, can just be seen.

Who could resist the temptation to wander into such a bower as this?—for bower it seems. When, however, you reach the hedge-bank that appears to bar the way, your astonishment is great to find that it is not a *cul-de-sac* which you have entered; for a turning to the left, so sharp as to be unseen until you approach it closely, reveals the most beautiful green and ferny lane which it is possible for the imagination to conceive. Oh! the glorious wealth of waving green, wild flowers, and fern-fronds, which the eye surveys, as it delightedly wanders along the charming vista which bursts upon you! On your right and on your left, just where the lane bends round, two stately Brakes stand, as if placed there to guard

this inner paradise of the ferns. And on the right, hard by the Brake which spreads its arching fronds towards you, a noble specimen of the purple-stemmed Lady Fern springs out of the hedge-bank; its splendid clusters of fronds, each a yard in length, flinging over the scene the indescribable gracefulness which is a fit emblem of fern-land.

And now for a plunge into this glorious lane of lanes. As far as you can see, it appears to melt away in shadowy green, as it sinks down over the declivity of the hill. For some distance along the path, in both hedge-banks, the Lady Ferns appear to hold sway. Here is a grand specimen, fully four feet long! and there are many others equally grand, and equally beautiful, in every shade of purple stem. Intermingled with them and forming a charming variety of fronds, are some fine plants of the Male Fern, the Broad Buckler Fern, with its curling leaflets, and the Brakes, the latter towering up to the height of eight feet. Peer between the branches which filter the light on the hedge-top, and you

will find small specimens of the Male Fern, with their shuttlecock shapes; the dark green fronds of the Hartstongue, and, dropping out of gnarled and moss-covered tree trunks the beautiful Polypody!

Now, for a moment, as you pass onwards, the arching bushes on each side close over you, whilst grand ferns, of noble growth, spread their tops across from each side, and touch you as you brush between them. Passing with reluctance some glorious specimens of the Male Fern, the Lady Fern, and the Broad Buckler Fern, far grander in size and aspect in this their native home than they ever grew on artificial rockwork, you come upon a spot on your right where a host of exquisite fronds of the Soft Prickly Shield Fern clothe the hedge-bank, and compel you to stop and admire them. The colouring of this species is extremely rich, when the plants are vigorous and finely grown. From the base of the frond to the apex along the central midrib, and from the base to the apex of the pinnules, run the rust-coloured scales, which strikingly contrast with

the fine green of the whole frond. Then the minute and regular subdivisions of the angular-shaped pinnules render this fern one of the most beautiful of its beautiful family. The aspect of a hedge-bank clothed with *Polystichum angulare* must be seen to be adequately appreciated.

Pursuing the pathway a few yards further, the scene, for one moment, changes. Through a gateway on the right, forming a gap in the sandstone hedge-bank which has helped to shut in the lane, the sun suddenly lights up the scene; and at the same time a charming prospect is offered by the valley below. Some of the grandest of Devonshire scenery lies before you. From where you stand, a declivity sweeps gracefully down to Totnes, which, nestling around its tall church spire, appears to repose in the very depth of the valley. On each side you get a peep of the winding Dart; on the left as it flows from the moor, on the right as it makes for the sea. But town and river are mantled by trees, now thinly scattered, now densely grouped and spreading away over upland and hill-top, as

far as the eye can reach, in dusky outlines. Town, river, and wood below, sloping uplands with meadow and corn-field, steep wood-crowned hills beyond, and the rugged peaks and barren torrs of Dartmoor in the far-off distance. Such is the landscape which lies stretched out before and below you.

But you turn again towards the glorious lane, which now begins a swift descent, the pathway rapidly narrowing. The branches again close over your head. Majestic fronds of the Brake, the Male Fern, and the Broad Buckler Fern, brush against you. The path is now almost obstructed by the wild and glorious vegetation which clothes the ground. Fern-fronds thicken around; the thickly-matted growth of the hedge-banks becomes more dense; the way appears almost barred by a grand specimen of *Polystichum angulare*; and you stop at the same moment, arrested by the fragrant odour from a huge bush of honeysuckle in full flower. Here, for a few yards, the shrubs overhead spread their branches far away from the hedge-top, and the

✓ lower portion of the bank on the left reaches back to such a distance as to envelop the ground underneath almost in darkness. In this kindly and congenial shelter the ferns are growing to grand dimensions, fostered by the darkness and humidity which prevail under the leafy canopy.

Onward, still onward, and downward winds the lane, until, all at once, it becomes fairly buried under the glorious mass of vegetation which grows with such wild and beautiful luxuriance around and above. You have now almost to crawl underneath the bushes and the graceful fern-fronds which literally choke up the way. For twenty or thirty yards your path is thus buried, and you are compelled to stoop until your chin almost touches your knees. Grand as you have hitherto found the development of fern-life, here, in this spot, you find the grandest development of all. Oh! the keen enjoyment you derive from the delicious coolness of this almost subterranean avenue! Midway in the glorious wealth of green there is a slight break in the bushes. Perched in the gap is a full blown foxglove ; and away beyond

and above, arching Brakes and Male Ferns spread out and over you their graceful fronds.

Once more the scene changes. Still swiftly descending, you pass a wood on your left, and then the lane again opens out. The pathway narrows, but the hedge-banks slope outwards, affording space for the most graceful development of the ferns which grow shuttlecock fashion on the sloping banks. Here, in the full daylight, you can see and admire the varying shades of glorious green which the fern-fronds wear; the dark green of full grown Brakes contrasting, for instance, with the lighter shade of the incipient fronds, or with their own golden-green tips.

Again, for a moment, on its way down the hill-side, the lane opens up a prospect of the richly-clothed valley which you are now nearing once more. On your right, below the hedge-bank—over the open top of which you can peer—a meadow runs steeply down to a point where it is met on each side by two gracefully sloping uplands, beautifully though sparingly wooded. From the point of junction of meadow and upland the ground,

by a slow descent, sweeps away to the town, which, partly hid by the trees which embower it, and partly screened by the rise of the uplands, lies picturesquely along the river banks. Beyond the town the wood and meadow-covered slopes rise upwards towards the sky. The peep is exquisite, and affords for a moment a delightful contrast to the peculiar charms of the ferny lane.

In another moment, however, the open country disappears from view, as you pursue your way downwards. The path now descends so swiftly, that you need some care to secure a foot-hold. As it descends, it narrows to the width of a foot, and from its rugged stony character it is easy to see that it has been cut out of the rocky hillside, in the days of packhorses, and before the age of carts. Higher and higher grow the moss-covered banks, sloping outwards and upwards. Here, on your left, at the top of the high cutting—for it is no longer a hedge—is a spreading oak tree, thickly matted with gnarled roots of ivy. From out of the forks of this beautiful tree, just over your head, drop the pretty

fronds of the Polypody. Below, the side of the cutting is densely clothed with ferns of glorious growth. Splendid specimens of the Male Fern which, from their erect and noble-looking, yet withal graceful habit, fairly earn their designation. Growing to the left of the Male Ferns, whose fronds are more than a yard long, are two magnificent specimens of the Broad Buckler Fern ; the curling pinnules of the fronds giving to them a most lovely aspect. Beneath, revelling in the cool shelter afforded by the ferns which have been named, is a Lady Fern, throwing up its tender fronds with the drooping habit which is the charming characteristic of this plant.

Still, for a long distance, the lane follows its winding course between high moss, ivy and fern-covered banks, with trees far above, arching over and excluding the sunlight. Your path now becomes more like the rocky bed of some river, which a long drought has temporarily dried up. On your right you presently pass, in the twilight created by the shrubs around and above you, a hedge-bank which is clothed with the most

beautiful moss, growing amongst which are thousands of baby ferns, just springing into existence, and beginning to assume the ferny forms. The deep shade flung by hedge-bank and over-arching trees, and the perpetual moisture which is engendered between them, render this spot a congenial hiding-place for the fern-spores which germinate on the damp soil of the mossy hedge-bank.

And now the swift descent of the hill-side path is gently broken. From the deep soft shade of the lane you emerge into the sunlight. The hill-side begins to melt into the valley. Sunlit meadows, gently-sloping wood-covered uplands, orchards, and fruit-gardens are combined in exquisite variety in the scene before you. Now, between the leafy interstices in tree and shrub, you sight some white-walled cottages. Then, as you pursue your meadow path, you are again lost under a leafy canopy, as hedge-banks once more close in upon you. Anon an intermingling of hedges, meadows, and houses; and then your charming green lane abuts upon a winding road which leads away to the town.

WHAT IS A FERN?

CHAPTER VI.

WHAT IS A FERN ?

WE have made no attempt in the preceding chapters to offer any help in the *study* of ferns. Botany is a beautiful science, and those who have time and opportunity will find almost endless instruction and amusement in studying it ; but, as we have shown, there are very many who do not possess the necessary time and opportunity.

All that we have attempted to do, is to give such general descriptions of those of our native ferns which are to be seen in the west of England, as might conduce to the more extensive artificial cultivation of these beautiful plants. Of all the varieties which we have named, we have not in any one instance given such a minute description as might enable the young botanist accurately to distinguish one from another.

We have simply endeavoured to create a general love for the plants themselves, with the object of showing that, exquisitely graceful and beautiful as they are when seen growing wild in the situations which are natural to them, they will carry that native grace and beauty with them wherever they may be transplanted ; with the object, too, of urging that ferns should be grown in every garden, and be found in every house, however humble it may be ; for the lovely plants will shed their soft charms no less in the cottage of the peasant than in the mansion of the squire—no less in the garret window than in the handsome conservatory.

We do not write for those who have any acquaintance with ferns ; we do not write so much for those who live in the country as for those who live in our cities and in our large towns, and who too frequently are content to get their peeps at ferns during their rare and occasional visits to the country. There are few homes which do not possess plants or flowers of some kind. Even when a house has no garden attached to it—and

how many thousands of houses there are in big London alone without gardens!—an attempt is made to compensate for its absence. Sometimes the windows are filled with plants—generally with flowers. Even the poor hovel, even the most wretched garret is provided with at least one solitary flower-pot, whose occupant, pining perhaps for the sun which can never reach it, drags on its sickly existence, until at length it dies under the influence of an unnatural atmosphere, struggling to the last moment with its abnormal condition of life. But it is rarely that ferns are to be seen under the same conditions; and it is because we would show how it is that these lovely plants are admirably adapted to live under conditions which flowering plants cannot survive, that we have written these chapters. Here we feel that it will be necessary, before we proceed any further, to define the position ferns occupy amongst the great portion of the living world which we call the vegetable kingdom.

The simple question then at once arises: What is a fern, and how is it to be distinguished from

other plants? The general answer to this question is that a fern is a flowerless plant. Although flowerless, it is not seedless; but its peculiarity is that it acquires its seeds without the intervention of flowers. Let us borrow just one hard word from botany—and we only do so because in one word it explains the most exact distinction between ferns and other seed-bearing plants. Ferns, then, belong among plants to the class *Cryptogamia*, which literally means “concealed fructification.” They are therefore, although flowerless, seed-bearing plants, and when they bear seed they hide it away. Those who have never seen a fern would naturally, at first, experience some little difficulty in knowing—although bearing in mind the general definition which we have given—how to distinguish a fern from another plant when both are—the one without seeds, and the other without flowers or seeds. No definition which would be sufficiently popular for our purpose can be offered to remove this difficulty. Certain peculiarities of ferns can be mentioned, and when these are remembered, one or two visits to a

country lane where ferns abound will be quite sufficient to accustom you at once to the difference between a fern and an ordinary plant.

Some parts of a fern bear different names to those affixed by botanists to the corresponding—we use the word “corresponding” in its popular, and not in its strictly technical sense—parts of another plant. First of all there is the crown, which may be styled for the sake of simplicity the mainstay of the plant, or the base of its stem. From the under surface of this stem or root-stock proceed the long fibrous roots, which, diving down into the soil, or penetrating between the crevices in rocks and walls, seek and convey to the plant the abundant moisture without which it could not live. From the crown or root-stock upwards grow the stalks, which support what would be popularly called the leaves. Each of these stalks is called a *stipes*, and in most ferns both the upper surface of the crown and the stipes are covered with scales, a rust-coloured kind of excrescence.

On each stipes, at a distance from the crown of the plant which varies in different specimens of

ferns, commences the leaf, technically and beautifully styled the *frond*. At this point commences the exquisite grace and beauty of the plant. Its midrib, from the point where leaving the stipes the frond commences, is called the *rachis*. Should the rachis have ribs branching either horizontally or obliquely away from it, these ribs are still called the rachis, its parts being distinguished the one from the other by the terms, the *primary* or the *secondary rachis*. Upon the rachis it is that grow the leaves, leaflets, pinnules, and lobes, either in a simple or a compound form ; and it is their infinite variety of form—simple, scalloped, saw-edged—and the exceedingly graceful manner in which they are arranged on the rachis, that constitute the peculiar elegance of a fern. The manner in which the fronds of ferns spring up from the crown of the plants is another peculiarity in their growth, and one that distinguishes them from ordinary plants. On starting from the crown, the fronds have the appearance of so many little balls, which as they develop unroll upwards. It is then seen that the whole frond has been rolled together in circinate

manner—that is to say, from the top of the frond spirally downwards. In the simple fronds there is one simple unrolling from the base outwards to the extreme uppermost point of the frond. In the compound species of the plant there is first of all the primary unrolling, and that is followed when completed by the lateral unrolling of the leaves on the rachis, which lateral unrolling is followed by perpendicular and lateral unrolling in alternation.

A FERN PARADISE AT HOME.

CHAPTER VII.

A FERN PARADISE AT HOME.

WE have offered the preceding very simple definitions of the distinctive characteristics of ferns, merely as some kind of guide to those who are totally unable to distinguish a fern from another plant. But if at first there be any difficulty in making this distinction, it will be short-lived. About ferns, whether small or large, whether just starting into life or developed into their grandest proportions, there is an almost indescribable aspect of majesty and grace. We have often wandered for miles through ferny lanes, with no eye for any plant but ferns. They have seemed to speak to us, and they have invited and engrossed our attention. We have said, and we repeat, that the study of ferns has become on the part of thousands a passion. We know of no

occupation in the country which is more enjoyable than hunting after ferns. We have singled out Devonshire, and given to that beautiful county the name of the "Fern Paradise," and well it deserves the name. Who that has experienced the pleasure can deny that to wander after ferns through its beautiful woods—to search the rocks, the ravines, and the streamlets which abound in its magnificent moorlands—to cross, minutely searching from moss-covered boulder to moss-covered boulder, the beds of its brawling rivers, listening to the soft thunder of their numerous waterfalls, or to the loud roar of rushing torrents where the mountain stream sweeps down into the valley—who can deny, we repeat, that the pleasure of a wild ramble like this is exquisitely sweet?

But although, as we have said, the enjoyment to be gathered from a ramble either through the green lanes of Devonshire, or the ferny lanes of other counties, is beyond the reach of thousands, yet there are few places where even the poorest cannot obtain ferns. Flowers that are cultivated—and our garden-flowers require cultivation for their

proper development—are often beyond the reach of the poor : and no one brings the roots of wild-flowers into our towns. If they were brought hither they would pine away, perhaps more quickly than our garden flowers ; and they at least would not thrive any better in the absence of that one vitalising element—sun. But ferns that grow in wild woods, and open plains, are in the free right of all who choose to gather them. They are gathered sometimes and brought into our towns and cities by itinerant vendors ; but you seldom see them in the dwellings of the poor. They nevertheless might be there. If there were a demand the poor purveyors of the poor would soon bring a supply from the free wild country where they grow ; and there would be that demand if the poor knew more about these lovely plants.

Ferns will grow where flowering plants would perish. They require moisture and shade—not stagnant, but percolating moisture. Place them where you will—on the floor, on the table of a dimly-lighted room, in the sunless window-sill, in

a shady corner—anywhere, and they will grow and develop, unrolling their charming fronds, and exhibiting their sweet feathery forms with all their natural grace in the presence of squalor and misery. The poor seamstress painfully working in yon ill-lighted garret, where the glorious sun never comes, might perhaps have shed bitter tears over the withered flower that all her care had failed to rear! But a fern would grow where her flower had died, would smile upon her with its mute flowerless smile, would live in the dark light of her attic window, and, unfolding its fronds day by day, would assume its most majestic and graceful form even in the presence of a poor seamstress.

But it is not only the poor who have to live in gardenless dwellings, and look out from sunless windows. The mansions of the rich, and thousands of houses of the well-to-do, and of the middle classes, are necessarily in this great London, and in other cities and towns, placed where the sun cannot exert his charming life-giving influence. Many a window of a grand house looks

out upon nothing but brick walls, which tower up high and blot out the sun's rays. The occupants of these houses are often bound, by the exigencies of business, to make their homes for weary months in these shadowy dwelling-places.

Why, then, do they not bring the beautiful ferns into requisition? What exquisite grace would be shed over every room in a house, if every available space were occupied by the feathery fronds of these beautiful plants!—on tables and sideboards; on mantelpieces and on window-sills; hanging from window-rods; on the landing of the stairs; in the hall; in the bed-rooms—everywhere in fact. Why not? Without any curtailment of necessary space, without any inconvenience, these beautiful plants might be so arranged as that every house, “be it never so humble,” might become a “Fern Paradise.” The hardier kinds, if kept within doors, will survive the winter, and look fresh and green throughout; and the more delicate and fragile of the species may be preserved in all their natural freshness under a covering of glass. Plant them in a case, and cover them with a shade, and then you will

have, even in midwinter, a miniature fernery. Do you want a sweet smell as from a country lane? Take off the covering of glass, and your tiny imprisoned favourites will exhale the sweet familiar odours; and where the moisture has rested on their feathery tips, there you will see as if it had been dewdrops.

Have you a dark, damp corner in your garden, where you cannot get your flowers to grow? If you have—and few there are who have not, for everything has its shady side—throw some loose stones together in rockery form, and plant ferns there. They will revel in the obscurity of the retreat which you have chosen for them, and smile gracefully and thankfully upon you from out of their dark corner.

Everywhere if you will, in your gardens and in your houses, you may have a “Fern Paradise”—“a thing of beauty and a joy for ever.” Even the poorest of the poor, compelled by the unceasing pressure of “work! work! work!” to cry, in the touching words which have immortalized their author—

“Oh but to breathe the breath
Of the cowslip and primrose sweet,
With the sky above my head,
And the grass beneath my feet”—

may have, if they will, a “Fern Paradise” in
the saddest and most cheerless of sad homes.

Part II.

FERNS AND FERN CULTURE.

INTRODUCTION.

INTRODUCTION.

THESE pages, it has already been intimated, are not intended for scientific readers. Our object is to create a universal love for the beautiful ferns; and as yet only such general descriptions of ferns and ferny scenery have been given as might suffice for the purpose which we have set before us. But to give to the little volume a utility beyond what it would possess by a too strict adherence to mere generalization, some descriptions will be now given of each species of such of the exquisite and graceful fern family as have chosen to make these islands their home.

Too much, however, will not, with this object, be attempted. The little book is not intended to compete with botanical treatises. It makes

no pretension to be a hand-book. It is in substance "a plea for the ferns," and as such it goes forth to the world. But it aims at being widely useful. Many ferns which grow in lovely Devonshire are never seen in other counties; but the county is poor indeed which cannot furnish a few specimens of what are called the common varieties of our native ferns.

In the following pages of description the simplest definitions will be given; and in addition to these, under the name of each fern information will be furnished as to the particular situations in which it grows, the method of cultivation, the soil, and other matters which will be of interest for the fern-lover.

Section I.

SINGLE FERNS.

CHAPTER I.

THE BRACKEN.

Pteris aquilina.

OF all our native ferns, the Bracken, or Brake, is the most plentiful, and the most widely distributed. It abounds almost everywhere; and hence, perhaps, the reason why it has been considered by some persons to be a common or vulgar-looking plant. But it is emphatically a vulgar taste which can thus judge of this beautiful fern. To our mind it is exquisitely graceful; and its abundance does but increase the charm which it flings over hill, woodland, and plain; and does but testify to the abounding goodness of the Creator in giving us *so much* to delight the eye and to please the mind.

That the Bracken is put to vulgar uses may be

granted; and that it represents to the vulgar eye—more completely, indeed, than any other member of the graceful family to which it belongs—the idea of “a fern” we equally concede. But we indignantly repudiate the attempt to fasten the stigma of vulgarity upon the wild Brake. The reproach recoils upon those who invented it; and the beautiful plant will have its reward in the keen appreciation of the true fern-lover.

We have said that the Brake is to be found almost everywhere. The general fact is a sufficient indication of its hardiness. But under such conditions alone as ferns love is it to be found growing in full splendour, and endowed with all its natural grace and beauty. Alike on the wild open common, in the dark shade of the woodland, by the glancing waters of our streams, perched on the hedge-tops, swathed in the deep foliage of the hedge-bank, covering the hill-sides, on the bleak hill-top, grow the Brakes; now tall and vigorous, now dwarfed and feeble: but whether of giant or pigmy growth, ever graceful. Where yonder wood has year by year, for many a long year past, shed

its soft crop of leaves, which softly falling soften in decay, and form a spongy bed of mould—there the Bracken revels: there its roots delightedly wander through the congenial soil, sending up a miniature forest of delicate-looking fronds, which wave their graceful tips underneath the larger forest growth which shoots up against the sunlight.

The Bracken has a creeping root. It is, in fact, a curious kind of root—half stem, half root—which crawls along horizontally underground. Sometimes, when attracted by soft, congenial soil, this root penetrates deeply into the earth. It has, in fact, been known to go down to as great a depth as fifteen feet. Commonly, however, the depth is much less. If the top soil be sufficiently congenial to the plant, it contents itself with creeping—most extensively, however. As it creeps horizontally—and its vertical subterranean advance does not interfere with its horizontal progress—it throws up at short intervals its beautiful fronds, which first find their way above ground in spring, the time varying with the earliness or lateness of the season. The creeping roots of the

Bracken are chiefly thick, varying from the thickness of an ordinary lead pencil to that of the little finger of the hand; and the rootlets or fibrous roots of this fern are few in number. We may appropriately adopt, from botanical phraseology, a name for the thick creeping root of the Bracken, especially as we shall have occasion to use it when speaking of other ferns with similar roots. There is the less objection to the use of this name, because it is simple and euphonious. We shall, then, style the creeping root of the Bracken the *rhizome*. From the subterranean, succulent, blackish-coloured rhizome start the incipient fronds, which, when they break the earth, have the appearance of little hoary, hairy buds, that unfold and develop into the perfect frond.

The fronds of the Bracken—stem and leaf together—rise to all heights; from sometimes only a few inches, when the plant is growing on hard, uncongenial soil, and remains exposed to the power of sun and wind, to a height of ten feet, when growing in the moist, shady recesses of woods and forests. The nature of the soil and

situation influences, too, the form and development of this fern. But describing it under its usual conditions, it may be stated that the stalk of the frond, of a lovely green colour, is a little more than half the length of the latter, which, from the point where the stalk ends, exhibits a triangular appearance. But its uppermost tip forms the most acute angle of the three, the bottom of the frond being the shortest of its three sides. Unrolling upwards, the bare stalk being terminated, and the rachis—the main or central stem of the frond proper having commenced—on each side, right and left, are thrown out in pairs the side branches. These side branches continue to be thrown out in pairs as the fronds unroll upwards, each pair, however, diminishing in length until the extreme point of the frond is attained, within a short distance of which the perpendicular and the lateral extensions are merged. Each one of the side branches is again divided, and bears on its midrib successive pairs of leaflets, sometimes placed opposite each other, and sometimes placed alternately. These are longest at the part of the branch near the central midrib of

the frond, and gradually diminish in length as they reach the extreme point of the branch, until they terminate in a point. In fine specimens of the Bracken, the leaflets on the side branches of the frond are again divided—this time into lobes, which are arranged in pairs on the rib of the leaflet. The lobes are narrow, and oblong in shape, with broad bases and bluntish tops, each lobe at the base of the branches at the lower portion of the frond being distinct—that is to say, disconnected from the lobes on each side of it; but towards the tips of the lower branches, and on all the branches at the highest part of the frond, the division between the lobes on each leaflet is not carried down to the rib of the leaflet, which in such a case presents somewhat the appearance of a double-edged saw. At the backs, and along the margins of the lobes of the Bracken, lie the spores in countless myriads, covered by a thin leaf-skin, and arranged in rounded lines; at first, in colour of a whitish green, but becoming, as autumn arrives, a rich golden brown. Then the skin-cases which cover these infinitesimal germs of fern life

bursting, the tiny atoms are scattered far and wide, and falling on congenial soil, and being subjected to the conditions which favour their existence, become developed into the mysterious and beautiful fern life which we admire.

One curious and interesting peculiarity of the wild Bracken must be noticed. If a vigorous stem of a Bracken frond be cut transversely close to the ground, and examined, a figure having a striking resemblance to an oak tree will be discovered in the centre of the cut section of the stem.

In lovely Devonshire we have seen the beautiful Bracken, in the damp recesses of woods, soaring to its greatest height of ten feet, and spreading abroad its feathery arms with exquisite and drooping grace. It is always beautiful, especially when densely covering the ground; but we do not recollect to have ever seen it wear so charming an aspect as in one particular fir copse in the immediate neighbourhood of Newton Abbott. The whole length of the fir plantation, as far as the eye could reach in every direction, was covered with golden-green Bracken. The graceful symmetry of

the scene was really charming to behold. No tall grass, no plants, or shrubs of any kind were intermingled with the sea of feathery Brakes which, waving in the wind, conveyed to the mind a weirdly graceful idea of fairy-land.

The Bracken is, indeed, the free wild fern of the forest; possessing preeminently a tender and romantic grace. It is the fern of the forest, as distinguished from the fern of the wood, grove, or copse. Transplanted, it will retain all its delightful characteristics in the fern garden. We have read in some fern books that the Bracken cannot be cultivated at all in gardens and rockeries; in others that its cultivation is extremely difficult. But both statements are erroneous; and the mistake has probably arisen in this way: Great care is necessary in taking up the Bracken from its wild habitats, in order to secure a proper quantity of rhizome and of root; and without this care the rhizome is liable to get broken. The latter penetrates the soil to some depth, and to transplant it successfully, you must dig deeply down. The best plan is to remove such specimens as

may be found growing on shallow though rich beds of leaf-mould; that is to say, under conditions which compel the rhizome to creep horizontally, instead of to grow down vertically. Then in order not to break or injure the rhizome, the plant should be removed together with the soil in which it may be growing. Small specimens should be taken with this object, as it is generally impossible to get up the roots of the larger growths. We remember going to Hampstead Heath, some few years since, for a small Bracken. We removed one, turf and all, bodily, and the same plant is now growing bravely. As we pen these lines, our Bracken has just performed an extraordinary feat. We planted it between two small rockeries amongst irregular blocks of stone; and during the summer it has thrown up its fronds from its creeping rhizome in various directions. One morning we noticed what appeared to be a broken tip—freshly broken it seemed—of our Bracken frond lying on the top of one of the rockeries which the plant had overshadowed. “Those dreadful cats!” thought we; and we

proceeded to pick up the broken piece, when wonderful to behold, it was not a broken piece at all, but the persevering tip of an enterprising frond which had found its way *right through the rockery*, and had begun gracefully and triumphantly to unfold on the top. What this clever Bracken will ultimately do, it is impossible to say ; but we shall not be surprised, after its adventure through the rockery, to find its fronds peeping up in any part of our garden.

The Bracken is a great favourite of ours ; and it cannot be other than a favourite with all true fern-lovers. Give it shade, moisture, rich loam and leaf-mould, and plenty of room to creep, and it will bring to your "Fern Paradise" the wild grace of the forest.

CHAPTER II.

THE HARTSTONGUE.

Scolopendrium vulgare.

SIMPLEST and most easily recognizable of the ferns of Great Britain is the Hartstongue. Yet it is beautiful, notwithstanding its eminently simple and unpretending form. Its range is wide indeed—almost if not quite universal throughout Great Britain: very plentiful in England and Ireland, somewhat less plentiful in Scotland, and fairly distributed throughout Wales. You cannot mistake its green tongue-shaped frond, narrow and tapering, simple and undivided; sometimes smooth and straight, sometimes crumpled, but always delightfully green. The Hartstongue is in fact an evergreen, its new fronds starting into sight in April or May, and continuing to do so until the end of September, retaining their

greenness and vigour throughout the winter. The description of this beautiful fern cannot puzzle even the merest tyro in fern lore. A tufted root-stock, its crown elevated slightly above the ground level. Beneath, long fibrous roots, finding their way into the soil, or—when growing in rocky places, or amidst old ruins—into the moist interstices between the masonry. Above, from the crown, tufts of delightful green, leathery-textured fronds, erect and bold in habit when growing in exposed situations; gracefully drooping when in the dark, damp recesses of a shady retreat. In length from an inch to a yard, sometimes even more, according to circumstances and surroundings. A stem usually one-third the length of the entire frond—stem and leafy portion included. From the point of the stem commences the leafy section of the frond, which is hollowed at its lower part, heart-fashion; so that from the point where the stem (*stipes*) ends and the midrib of the frond proper begins, the latter hangs down on each side in the manner of two little ears. The frond proper is tongue-shaped—hence doubtless

its name—and tapers in its upper portion to a point; and from this point, through the centre of the frond, is carried a thick midrib, on each side of which—at the back of the frond—are arranged in oblique lines the spores, protected by a green cuticle covering them when the frond is young, but bursting this covering in the fall of the year, and revealing lines of rich, dark-brown seeds in countless myriads. The stem of the Hartstongue when young is covered with beautiful white downy-looking hairs or scales, which, as the plant becomes older, assume a brownish tinge; the stem itself being usually of a dark purplish colour. The fresh shining green of the Hartstongue is delightful to behold. The plant altogether beautifully contrasts with the compound forms of the other British ferns. It is most interesting to study its varying moods in its free wild state. Few of our native ferns are so enterprising as the Hartstongue. It will grow even on bare walls in the full sunlight, where it can at the best get little moisture for its roots. In such situations, however, it becomes a tiny thing, rarely exceeding

two or three inches in length, and often assuming a yellowish colour from constant exposure. But the favourite haunts of the Hartstongue are the depths of cool woods ; the tops of hedge-banks, where clustering foliage shuts out the sun and keeps in the moisture ; damp hedge-sides, where perchance an eternal moisture is produced by percolating water ; and the moist and dripping sides of wells. In such places its shining fronds grow to their finest dimensions. In the damp and shady clefts of rocks, too, the Hartstongue loves to grow. Clothing cavern walls and dropping from cavern roofs, it may also be seen in great abundance. Oftentimes splendid specimens of this simple and beautiful fern may be seen on the moist sides of parapet-walls, that overhang some brook or river ; and in such situations it bends its green and shining tops downwards, until they kiss the sparkling, eddying current below them. There they revel in the spray and vapour which surround them, waving their lovely tufts in the wind.

The Hartstongue becomes a delightful occupant

of the cool rockery in your "Fern Paradise." Give it the coolest and shadiest nooks, sandy leaf-mould, and peat, and abundance of water, and it will well reward the care bestowed upon it ; for its greenness and freshness will always make your heart glad.

CHAPTER III.

THE LADY FERN.

Athyrium filix-femina.

THE majesty of gracefulness is embodied in the Lady Fern. Amongst our native ferns this species stands unrivalled. Charming as all the fern family are, there is in this particular member of it an indescribable loveliness. Words cannot picture its attractions. It must be seen to be thoroughly appreciated; and one glance will convey to the mind a glad sense of its soft beauty, which no verbal description can properly give. It is, indeed, amongst its kind, the queen of delicacy, grace, and beauty.

Combined with its majestic gracefulness, there is an extreme simplicity about the Lady Fern, rendering its formal description a matter of ease. It has a tufted root-stock, always slightly raised

THE LADY FERN.

above the surface on which this fern is found to grow; sometimes raised to a height of several inches. From the under side of the root-stock grow the thin, matted, fibrous roots, which penetrate deeply into the soil, and eagerly drink in the abundant moisture which is essential to its existence. From the crown of the root-stock start up in thick tufts a mass of delightful green brittle and herbaceous fronds, supported each on its stem—one-third, and sometimes one-fourth, of its entire length; sometimes bright green in colour, at other times a delightful purple. The form of the frond is lance-shaped, tapering from its base to its centre, and from its centre to its point. On each side of its central rib, or rachis, are arranged in alternation a line of leaflets tapered outwards in the same way that the frond is tapered upwards. On each side of the midrib of each leaflet is a row of lobes, beautifully serrated, or saw-edged, and bluntish towards the point. In the larger leaflets the lobes are distinct and separate one from the

THE FERN PARADISE.

her. In the smaller ones the division between the lobes is less marked; and this is the case in every plant with the lobes which lie near the points of the leaflets.

The delightful, but most delicate, fronds of the Lady Fern are cut down on the approach of winter, during which the plant remains dormant. But in spring, about May, new fronds again start from the root-stock in abundance; and in the height of summer the beautiful plant attains the full glory of its perfection, with its mass of light delicate-green, arched and gracefully-drooping fronds, at the back of which lie in thousands, ensconced under the protection of the charming, frilled, and indented lobes, the little horse-shoe shaped cases which contain its myriads of tiny seeds.

Most cool and shady of cool and shady nooks are the habitats of the beautiful Lady Fern. Down by the river's brink, just where the spray-flinging stream makes the air moist and cool, and where overhanging boulders or

THE LADY FERN.

covering branches keep in the shadow and keep out the sun, there will you find the Lady Fern perched, its droopingly-delicate and lace-like fronds quivering in response to the touch of the thousand tiny water-drops which, flung by the dashing water, fall over it each moment. Sometimes, but rarely, when streams are not near, this exquisite fern may be found growing on open hedge-banks; but these are not its favourite or its natural habitats; and when by chance it may be growing there, it will be found to have lost half of its natural grace and delicacy. In the deepest shade of the wood, on moss-covered soil, through which pure water unceasingly percolates, causing heavy moisture to pervade the air; or at the foot of a shady bank, over which trickles a tiny stream from the level above it; or perchance perched in the dark cleft formed by the overhanging rock of a waterfall, will you find the Lady Fern developed to its grandest proportions, and assuming its most graceful and beautiful aspect.

THE FERN PARADISE.

A charming occupant for your "Fern Paradise" is the Lady Fern. Whether in the house or the garden it matters not,—it will thrive well. But remember that it lives upon shade and moisture. These are its food and drink; and without them it will shrink and die. If in the garden, place it in the shadiest corner of your rockery, and when there you can never give it too much water. But give it full freedom. Place it where it can have ample space to unroll and spread out its charming fronds. If you would see these displayed in their natural and graceful habit, their tips should not touch any jutting fragment of stone. Although planted in the lowest tier of your rockery, it should stand on the crest of a stony knoll, so that its arching fronds may be thrown upwards and outwards, free of any surrounding obstruction. There, in such a chosen situation, it will exhibit the perfection of its gracefully-arching habit.

Have you a shady window in the house, on which, facing north, the sun never shines? If

THE LADY FERN.

you have, choose that window for the Lady Ferns you may wish to grow indoors. Place the pots containing them, if you will, on the window-ledge, or suspend them in mid-window by a cord depending from the top, and holding a wire basket or other receptacle. The pot saucers should be kept half-full of water, so as to keep the beautiful plants moist and cool. Provide for them soil of rich loam, leaf-mould, peat, and sand. Then they will thrive luxuriantly in their adopted home; and from window-sill or mid-window will smile on you thankfully.

CHAPTER IV.

THE HARD FERN.

Blechnum spicant.

ALTHOUGH not so graceful as most of the British ferns, there is a rigid elegance about the Hard Fern. Its name is admirably suited to its character, for its texture is hard, and its habits robust. But its delightful colour—a dark shining green—and the elegance of simplicity which is noticeable in the arrangement of the leaflets on its fronds—make amends for its lack of feathery grace. Like the Lady Fern, in whose company it is frequently found, it delights in abundant moisture and the most complete shade, preferring situations where water perpetually trickles over its crown. Its fronds grow from a tufted root-stock, and are supported on stems which vary in length in different specimens, but

THE HARD FERN.

are generally not more than one-sixth the length of the frond proper. The Hard Fern grows in varying lengths, according to soil and situation. We have seen magnificent specimens in lovely Devonshire in damp woods, and on the moist banks of brawling streams, growing to a length of nearly a yard. This fern has two perfectly distinct kinds of frond; the one barren, the other seed-bearing; the latter being always narrower than the former. The barren fronds are lance-shaped, or perhaps it would be better to say they are strap-shaped, but tapering more or less from their base to their centre, and from their centre to their point. One simple midrib—in continuation of the stipes—clothed on each side with a uniform row of leaflets, not quite separated from each other, but joined by a narrow straight leafy wing, which runs along the entire length of the midrib on both of its sides. The leaflets are somewhat narrow and blunt-pointed; the whole frond having very much of a comb-like appearance. The fertile fronds are taller than the barren ones, and grow up from the centre of the tufts

THE FERN PARADISE.

by the latter. In these fertile fronds the leaflets are much narrower than those of the barren fronds, and unlike the latter they are quite distinct, being separated by a greater space from each other. There is, too, a much longer stem in the fertile fronds of the Hard Fern than in the barren ones, the leaflets being at first the tiniest protuberances from the midrib, and gradually extending in length; but again decreasing in length as they near the point of the frond. The backs of the fertile fronds in their upper parts are densely clothed with seeds. So soon as these have been scattered in the autumn the tall, thin fertile fronds wither and drop away to the ground; but the barren fronds are evergreen, and preserve their delightful freshness until the re-appearance of spring calls up another cluster from the root-stock.

The Hard Fern is widely distributed and abundant, delighting most to grow in damp and dripping situations. It should therefore be grown in the lowest tiers of your fern rockery, and have abundant moisture. In its wild state it

THE HARD FERN.

is often found growing in stiff clay soils, but rejoices most in fibrous soils in which leaf-mould largely abounds. It will not be too particular concerning the soil in which you grow it, but the nearer you can approach to the conditions under which it is found growing in greatest luxuriance in its native woods, heaths, and bogs, the greater success will attend your cultivation of it.

CHAPTER V.

THE ROYAL FERN.

Osmunda regalis.

OF royal and noble aspect, indeed, is the Royal or Flowering Fern. It is the largest and grandest of our native species, and approaches more nearly than any other to the form of a tree fern. Its favourite habitats are the banks of moorland streams where it can secure abundant moisture, and a soft, spongy, peaty soil. Oftentimes it is found in damp woods, growing in such situations to an average height of four, five, or six feet. It is, however, found in greatest luxuriance in parts of Ireland; and on the banks of the lakes of Killarney it sometimes attains a height of twelve feet, and presents a singularly grand and beautiful aspect. The root-stock in most of our native ferns is seldom raised more than a

THE ROYAL FERN.

few inches above the surface of the ground: in the case of the Royal Fern its root-stock, somewhat after the manner of the tree ferns of the tropics, is in large specimens raised to a height of one, or even two feet above the ground, thus forming a kind of pedestal for its tufts of tall and arching fronds.

The general form of the fronds of this stately and beautiful fern is lance-like, as, indeed—more or less broadly or narrowly—are all our British ferns. But there is a peculiar distinctiveness about the grand *Osmunda* which renders it easily recognisable amongst other species. The stem is of a light yellowish green, and the rachis bears several pairs of branches, placed on each side of it, and opposite: each pair diminishing in length towards the point of the frond. The branches are themselves broadly lance-shaped. Ranged in pairs on each branch are a set of leaflets. These leaflets are oblong in shape, with broad points and obtuse bases. In the centre of the base of each leaflet there is a slight hollow corresponding with the line of its mid-vein, the continuation of which

THE FERN PARADISE.

forms a stem so short, however, as to be scarcely perceptible without close inspection, but forming a connecting link with the stem of the branch. If you hold the frond of the *Osmunda* against the light and look through the leaflets you will see a really beautiful arrangement of veins. There are two kinds of fronds in the Flowering Fern—barren and fertile. It is the barren frond which we have been describing. In the fertile frond the lower portion is similar to the barren frond, but in the upper portion the leaflets are contracted, and bear on their backs dense masses of seed. At first green, this seed gradually becomes light brown in colour, and then it almost completely hides the contracted leaflets on which it is borne: and at this stage it has somewhat the appearance of a flower at the top of the frond; thus giving some reason for the name which has been given to this species. In reality, however, the spores of the *Osmunda* look like what they are—a cluster of ripened seed, and bear but a slight resemblance to a flower.

In bog-land as well as in woodlands and along

THE ROYAL FERN.

the streams of moorlands the Royal Fern finds its habitats. The grand specimens have enormous roots, and the fern-hunter will have to labour hard to get them up. But it is a labour of love, and one not to be delegated to others. After carefully digging up in the woods and transplanting in your fern garden a noble specimen, there is an immense satisfaction in remembering, when you see it unroll its fronds in its new home, that you yourself gathered it. Every time you look at it the sight brings back the delightful association of the wild woods and the grand moorland scenery, amongst which you wandered in your fern-hunting rambles.

Pleasing indeed, almost beyond expression, are the scenes which we recall to mind in connection with the stately *Osmunda*: scenes of sylvan beauty of a rare and unusual kind. We will instance one of these, and the relation may, perhaps, serve to recall similar scenes to the minds of our readers.

We had started from Totnes to search on the borders of Dartmoor for some specimens of the

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Myal Fern, taking the precaution to provide ourselves with the necessary digging implements. Away we drove for seven miles amidst ever varying landscapes, by copse, hedgerow, stream and meadow; now climbing the upland road; now—arrived on the upland crest—catching a momentary glance of the wide landscape, spread, in its mingled loveliness, over many a long mile; now diving down a steep declivity, under the darkening shadow of overhanging woods. Still descending, on we went. Now we crossed the glancing waters of the winding Dart; and now again ascending and descending upland after upland, we arrived at length at a point of our road within a few hundred yards of our destination. Then we turned round to the right and, before descending a carriage road just wide enough to admit our barouche, we paused a moment spell-bound by the transcendent loveliness of the scene. A valley of woods of varying hues of green, and in the deepest gorge of the valley the beautiful Dart, its winding course—where the glancing water is hidden from view—shown

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by the taller forms and the darker shade of the trees on its banks! A few moments more, and we have, in following our narrow path, lost the outside view. We are now, in fact, away from the sunlight, and under the shade of the tall and graceful trees of a coppice. Oh, delightful coolness! Beneath our feet, soft velvety turf of glorious golden green! Above, the tall tree-tops screening the sunlight and checkering the blue sky!

But the *Osmunda*—the stately, the beautiful *Osmunda*! We are close upon its habitat. The fern abounds in lovely Devonshire, and fringes the banks of the Dart, and we are now within sight of that river. We turn from the coppice along a narrow winding path, and as we proceed onward the sound of rushing water strikes on our ear! Now screening branches deepen the shadows on our way, until presently the light comes in upon our path through the tangled shrubs on our right. Putting these on one side and brushing into their midst, we soon find ourselves on the river's brink. Then we

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merge again into the full daylight. The sun sparkles on the rippling stream, giving the light as from ten thousand diamonds; and here, at last, bending over the banks—their tall fronds spreading outwards and moving responsively to the breeze, which is briskly blowing,—are Osmundas in rich profusion! Hard by is a grand tuft of the Mountain Buckler Fern, and intermingled with it are equally grand tufts of the Hard Fern! Both are on the extreme brink of the stream, and their roots and those of the Osmundas are within reach of the abundant moisture, which is the secret of their grand proportions. Split fragments of rock are scattered about on the river side and in mid stream, giving a wild picturesqueness to the whole scene, which is beyond description lovely. The gurgling, splashing, foaming water, sparkling with its ten thousand diamond flashes; the wood-bounded, winding banks, with waving fern-fronds, now carried aloft and arching outwards with graceful and majestic symmetry, now softly drooping, whilst their pendant tips are caught one moment

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by the impatient stream, to be released the net, and to fling a shower of silver drops around them.

Who could resist the temptation to carry away a tiny bit of this river and woodland scenery, by impounding yon jutting clump of fern-roots, Osmunda, Hard Fern, and Mountain Buckler Fern? There is here enough and to spare, and nature, in its rich profusion, can well afford us the pleasure which we derive from the possession and transplantation of some of our favourites. Nature asks no questions, demands no penalties for our spoliation, but freely gives us up these wild and beautiful plants.

We have them still. Taken from the dewy moorlands, they nevertheless spread out still their characteristic loveliness in our fern garden, although imprisoned within city walls; and we never look at them without experiencing a keen sense of pleasure, as we recall all the circumstances of our wild ramble in search of them.

CHAPTER VI.

THE MAIDENHAIR.

Adiantum capillus-veneris.

THIS beautiful fern is one of the rarest of our native species. It is found in Devonshire and Cornwall, in some parts of South Wales, and in Ireland; in Ireland, in fact, more abundantly than in any other part of the United Kingdom. But it is more than possible that the Maidenhair abounds in some localities where it has never yet been discovered. It often grows in inaccessible situations, and this fact would give a reason for the supposition which we have started. Rocks on or near the sea coast, and dripping sea caves, are its favourite habitats.

The Maidenhair has a black, hairy, creeping caudex of slender shape, from which are thrown up a mass of the most beautiful and delicate

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fronds. The stems of the fronds are more like thick hairs than the stems of a plant. The general outline of the frond is lance-like. Its length varies from six inches to a foot ; but sometimes, under conditions peculiarly favourable to its growth, it reaches a length of more than a foot. The stem is about half the length of the entire frond. Then commences the rachis, on each side of which, in irregular alternation, are thrown out the branches—if they may be so called—of the frond. These branches, black and shining, are like lesser hairs ; and to them are fastened on each side, in irregular order, delicate fan-shaped leaflets of an exquisite shade of green. The leaflets are fastened to the branches of the frond by short, hair-like filaments, black and shining, somewhat like the stem and branches, but thinner and more delicate. The spores of the Maidenhair are borne at the back and on the edge of the leaflets, the margin of which is folded back to cover them, thus losing its green colour and becoming blanchd.

It is the fortune of few fern-lovers to see the Maidenhair growing in its wild habitats. But as

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In cultivated plant it is not rare, for, like all our ferns, the myriads of seeds which each plant bears favour its extensive propagation. Artificially grown, it will, in warm, moist, and sheltered situations, live and thrive in the open-air rockery. But its excessively delicate nature requires peculiar care, and renders it more especially adapted for indoor cultivation. And to grow it successfully indoors, especial attention must be given to its requirements. It cannot bear the sudden changes in temperature to which the atmosphere of some sitting-rooms is subject. When there is an equable temperature maintained, and the air is not too dry, as, for instance, in rooms which are not constantly inhabited, there the Maidenhair will thrive in pots, in the proper soil, without any covering. But otherwise a covering of glass is essential, so as to keep around the plant a perpetual moisture. With such a covering it will revel in the warmth of inhabited rooms, and become a delightful companion for the fern-lover, distilling on the points of its fronds the dewdrops of its prison. A light soil, suited to the delicate nature of the

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plant, must be provided for the Maidenhair. Mix peat and silver-sand together, the former predominating, and in the mixture let there be some broken pieces of limestone or sandstone. Or, if you will, imbed in the soil two large pieces of limestone or sandstone; put them near together; fill up the interstice with some of the soil you have prepared, and plant the delicate rhizome of the Maidenhair between. The pot or case in which it is grown you should half fill with broken pieces of stone or flower-pot, intermingled with a few pieces of charcoal to keep them sweet. Then upon this mixture of flower-pot and charcoal place the peat and silver-sand, and thereon plant your fern. If you have a window in which no sun shines, you may there suspend your Maidenhair in the half shell of a cocoa-nut. But holes must be bored in the bottom of the shell, so that when you occasionally dip it and its beautiful occupant in water, the superabundant moisture may drain away; for remember that ferns cannot endure soil rendered unwholesome by stagnant water. The moisture which they need must be fresh and

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111. The exceptional delicacy of the Maidenhair requires exceptional care ; but do not forget that for all the care which you bestow upon it, it will repay you by assuming in its adopted home the freshest and most delicate shade of delightful green, and the most delicate of graceful forms.

CHAPTER VII.

THE ANNUAL MAIDENHAIR.

Gymnogramma leptophylla.

SOME general resemblance to the Maidenhair in the arrangement of frond and leaflet, has entitled the Slender Gymnogram to the name of "The Annual Maidenhair." But this very pretty plant is distinguished from all our British ferns by the short period of its existence—springing up and dying within the year. A tiny thing it is, only three or four inches in length, its fronds rising from a tufted root-stock, their leafy parts being longer than their stems, which are of a brownish colour, and smooth. The fronds on the same plant are graduated in length, preserving no regular shape; those at first starting from the root being shorter and less prolific than those which succeed. They are somewhat irregularly divided into

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branches; the branches bearing fan-shaped leaflets, which have their edges notched. On the back of these lobes or leaflets are the spores. When these are shed, in the late summer or autumn, the *Gymnogram* dies. The spores, thus shed, germinate, and the plants produced, attaining maturity in the following summer, again die, after producing in their turn the spores for the succeeding season.

Jersey is the only habitat of the Annual Maidenhair. There it grows in moist hedge-banks. But, curiously enough, it has an antipathy to the shade of trees, although it likes, when growing in the open banks of the hedges, the shelter of dwarf vegetation; sometimes choosing to keep company with the moss which is to be found in such situations. In cultivation it should be grown in the greenhouse, or, if in the dwelling-house, under glass; and the soil adapted for it is light sandy loam.

CHAPTER VIII.

THE MOUNTAIN PARSLEY FERN.

Allosörus crispus.

TO compare this exceedingly pretty little fern to a tuft of parsley would be to give it, perhaps, the best general description which could be found for it. About six inches is its average height; but we ourselves have had specimens brought by a friend from the neighbourhood of Creetown, in Scotland, seven or eight inches in length: and it is even possible that larger specimens might be obtained from habitats where the conditions of growth are unusually favourable. The Parsley Fern has two distinct kinds of frond—barren and fertile. This distinction in the fronds exists in many of our native species; but it is only in some that, as in the case of the Parsley Fern, the

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Information of the fertile frond is different from that of the barren one. Spores may be present or absent from the backs of the fronds without necessitating any change in the latter. But it sometimes happens, as in the case of the Hard Fern and the Royal Fern, that the edges of the frond are turned back over the collections of seed, in order to form the cover or protection which in most of the species is a separate formation. This turning back of the frond narrows and gives a different appearance to the leaflets so turned back. But there is this further distinction between the barren and fertile fronds in the Hard Fern and in the Parsley Fern: in both cases the fertile fronds are much longer than the barren ones.

The green smooth stem of the Parsley Fern is somewhat longer than the leafy portion of the frond. The shape of the latter is triangular. On each side of the rachis are branches placed in alternation, and on these are the irregular serrated leaflets which, from their crisped appearance, bear, as we have stated, a striking

resemblance to parsley. The contraction of the seed-bearing leaflets on the taller fertile fronds gives to them an oval rounded appearance. The roots of the Parsley Fern are thick and matted, and from its crown the fronds grow in dense tufts. They are of a delightful green colour, and the whole plant forms a conspicuous ornament of the places where it grows. It is sometimes called "the Rock Brakes," from its habit of growing in stony places and on rocks and old walls. It is essentially a north-of-England fern, although it is found in Scotland and abundantly in Wales. Some plants have indeed been discovered—so it has been alleged—on Exmoor, near Challacombe; but it is not a Devonshire fern.

In the cultivation of the Parsley Fern one thing must be borne in mind: it cannot endure stagnant moisture, and indeed it does not like too much moisture of any kind, especially about its roots. Plant it, if in a pot, in a mixture of sandy peat and broken pieces of stone or flower-pot. It is delicately susceptible of frosts, and

its pretty fronds when exposed on your open rockery will die away on the approach of winter ; but when the soft genial spring comes round again the new fronds will bud into life once more with all their old green and crisped freshness.

CHAPTER IX.

THE BRISTLE FERN.

Trichomanes radicans.

DOWN on yon dripping rock, where, from the perpetual spray flung by the ever-roaring waterfall above, an eternal moisture reigns; where the arid winds of winter and the dry scorching heat of summer can never change the pervading dampness, which continues with unceasing persistence, grows the Bristle Fern! An eternal moisture is the vital principle of its existence. Not its roots merely, but crown, stem, and frond must be surrounded continuously, unceasingly, by moist vapours. Unlike the hardy ferns which will look fresh and green in the sunshine or when exposed to the play of the dry summer breezes, if their roots can drink in some moisture from wall, rock, or hedge-bank, the Bristle

Fern shrivels up, through its exquisite sensitive-ness, before the slightest drought. Nursed in the atmosphere of the waterfall, in that atmosphere must it live and develop.

Rare indeed amongst British ferns is *Trichomanes radicans*. Not England or Wales or Scotland can produce it. But it seems to have made a home for itself in the south of Ireland. There, in many localities, by river-falls, on dripping rocks on the lake borders, in ravines and glens, it is to be found: but only where unceasing dampness, caused by dripping water, exists. On the wet surface of the rock or wall which it has chosen for its habitat it spreads its thread-like, matted roots like a film. Sometimes it grows amongst the moss and earth which may have collected on the rocks. It has a creeping rhizome, from which grow its fibrous roots, that cling to the damp rocks or expand in the moist crevices between them. The rhizome is encompassed with hairs or bristle-like scales. The stem of the frond is usually about half the length of its leafy

part, the shape of which, from the point where the rachis commences, is somewhat acutely triangular. To the right and to the left of the rachis, and extending to the point of the frond, are a series of alternately-placed branches bearing leaflets deeply cleft, although not divided down to the midrib of the branches. The leafy expansion surrounding the veins of the leaflets is of a thin, pellucid, almost transparent texture. Indeed were the plant held up to the light it would seem to consist of a series of branched, wire-like veins, and the leafy texture surrounding these veins would have the appearance of delicate, filmy, semi-transparent wings. The spores of the Bristle Fern are produced under a curious arrangement. A sort of bristle, which is in reality placed in continuation of the veins of the leaflet, extends beyond the tip of the latter. At the point of the bristle, placed like a crown, is a little receptacle for seed; and in this receptacle, as well as along the sides of the bristle, seed is also found. Just where the bristle passes beyond the tip of the

leaflet, the substance of the latter is thickened, and the bristle has the appearance of being inserted in a sort of urn. The bristle-like arrangement has given rise to the name of this fern. It will be easily understood, when the delicate, pellucid, filmy texture of the fronds of this beautiful species is remembered, why it is that it cannot exist except in an atmosphere which is perpetually charged with moisture.

The Bristle Fern can only be grown under a covering of glass; but it may thus be cultivated with great success, if due care be taken to imitate as nearly as possible the conditions which are natural to it. Peat and silver-sand and pieces of freestone should compose the soil. The plant should be placed between the pieces of stone, and the pot or case in which it is contained must be kept constantly covered with a glass shade or frame, so as to retain the utmost possible amount of moisture. Under such conditions it will grow luxuriantly; and it is well worthy of care, for it is a plant of great rarity and of exquisite delicacy.

CHAPTER X.

THE MOONWORT.

Botrychium lunaria.

AN unpretending little fern is the Moonwort; but, nevertheless, exceedingly pretty. It is a by no means uncommon species, although, whilst very abundant in some districts, it is quite absent from others. The fronds grow to various heights, according to circumstances; sometimes only three inches, at other times ten or more. As the bud of the frond grows up, it emerges from a sort of brown membraneous sheath, which envelops for some distance the lower part of the stem of the frond as in a case. The Moonwort grows from a curious, twisted, fleshy root, of a brittle substance, and succulent in its nature. From these fleshy roots springs up the thick stem of the frond. This consists of two divisions, a leafy and a fruitful frond. The leafy portion

is carried outwards and upwards, away from the stem obliquely. It consists of a single branch, of oblong shape but blunt pointed, on both sides of which are a series of leaflets placed along at regular intervals, supported by short stems on their somewhat flat bases, and crescent or fan-shaped, their rounded outside margins being somewhat cut or indented. Rising above this leafy or barren frond is the fertile or seed-bearing frond. This is branched after a similar arrangement to that of the barren or leafy frond, each branch containing a cluster of seeds enclosed in globular cases.

The Moonwort abounds in open heaths and meadows, delighting to grow amongst the grass, on which, as some persons have asserted, it becomes a parasite. Hence in transplanting it for the home fernery, it is recommended that it should be taken up from the ground with a good-sized square of turf, so that the roots may not be disturbed. Loamy or peaty soil is adapted for it; and you can grow it on rockery, or in pots. It dies at the approach of winter; appearing again on the early approach of spring.

CHAPTER XI.

THE ADDERS-TONGUE.

Ophioglossum vulgatum.

SOMEWHAT similar in its general habit to the Moonwort is the Adders-tongue. Like the former plant it is found in meadows, seeking, however, those which are very damp from the fact of having a clayish soil, and from being subject to occasional inundations. It grows to a length of from six inches to a foot high, the variation in length depending, as is the case with all ferns, and, indeed, with all plants, upon the conditions—whether favourable or otherwise—under which it is found growing. It has a twisted, fleshy root like the Moonwort, and a succulent stem. The frond is divided into two parts,—a barren leaf and a fertile spike or stem. There is a general resemblance in the Adders-tongue—leaf and seed-bearing spike—

to a leaf of the lily-of-the-valley, with its flower-spike unfolded. The base of the leaf in the Adders-tongue envelops the seed-spike which rises erect from the point of junction, whilst the leaf—which is somewhat egg-shaped, or more exactly, perhaps, pear-shaped—passes upwards in an oblique direction to a bluntish point. The bare stem of the seed-bearing spike is usually about an inch in length, although it is sometimes more. Then commences the fructification, which is arranged in two rows—one on each side of the spike—of seed cases. These contain the dust-like spores, and when the latter are ripe the cases split across and release them. The spike, at its top, tapers to a point.

The Adders-tongue is plentifully scattered over England, in such situations as those which have been named. It is not quite so plentiful either in Scotland, in Wales, or in Ireland. It will grow easily in the fern-garden, or in pots, if the proper amount of care be taken to transplant it properly, and to imitate as nearly as possible in cultivation the conditions under which it grows in a state of

nature. As in the case of the Bracken and the Moonwort, it is necessary, in order to secure success, to take care in removing the plant to remove as much as possible of the soil in which it is found growing, without disturbing the roots of the fern. Both the Moonwort and the Adders-tongue are found growing in general in open meadows or heaths, amongst the grass which abounds in such situations. There is a double advantage in getting up your fern without disturbing its roots. In the first place you make sure that it will grow; and in the next place you ensure its commencing to grow immediately on removal. You, in fact, bring with your fern a bit of the meadow, or wild heath, and in your home "Fern Paradise" you at once surround your favourite with the delightful association of its habitat. The Adders-tongue does not, perhaps, possess in full measure the attractions of some other members of the beautiful fern family; but it is, nevertheless, beautiful in its simplicity; and it should by no means be banished from the fern-house, or the fern-garden, or, indeed, from any part of cultivated fern-land.

CHAPTER XII.

THE LITTLE ADDERS-TONGUE.

Ophioglossum lusitanicum.

A TINY little fern, sufficiently near in its resemblance to the Adders-tongue major to claim close relationship. A British fern it is, but hardly an inhabitant of England,—although it has been stated that specimens have been found in Cornwall. But in Guernsey it has its habitats, having been found near some rocks in that charming little nook, Petit Bot Bay. Like the Adders-tongue major, *Ophioglossum lusitanicum* has one barren frond—sometimes two—and an erect spike of fructification. But the barren frond, instead of being pear-shaped, is lance-shaped, simple, unscalloped, much smaller, and much narrower than in *Vulgatum*. Like the latter, it

risers from a fleshy, brittle cluster of twisted roots; but unlike *Vulgatum*, barren stem and seed-bearing spike, instead of rising some distance together above ground in the form of a stem, before separating into the leafy and the fertile branches, in most instances start separately from the ground. Like its relative *Vulgatum*, the Little Adders-tongue has a stem to its seed-bearing spike which rises above the barren frond. At the top of the spike begins the fructification; an arrangement of two rows of cases—one on each side of the stalk supporting them. In these cases are the dust-like spores, which, as they ripen, escape through the crevices formed by the splitting of their little prison houses.

One peculiarity must be noted in the Little Adders-tongue. *Vulgatum* first sends up its frond in May, from which time it remains until the late summer, when it disappears—the root remaining dormant—until the succeeding spring; but *Lusitanicum* starts into life and vitality in dreary January, lasts only a short two or three months, and perishes very early

in the season,—even before the actual commencement of summer.

The modest little fern only reaches a height of two or three inches. It is, indeed, even more unpretending than *Vulgatum*. But its habitats are similar; and in obtaining it for cultivation the same precautions must be used. From its tiny size, there will, of course, be less difficulty in transplanting it with a sufficiency of its native soil. Let its roots be undisturbed; and take it up bodily in the turf on which it is found growing. If you wish to plant it in your fern-garden, place your turf with its tiny freight in the selected situation. If you would grow it in a pot, secure one of the size necessary to hold the fern and its surrounding tuft of grass and grassy roots.

Section II.



FERN GROUPS.

SECTION II.

FERN GROUPS.

THERE is relationship in the fern-world ; and although we do not propose strictly to adopt the distinctions made by botanists, we shall observe a certain order in arranging our favourites. Hitherto we have described those ferns which live, so to speak, in a sort of isolation. Of the ten first described, each one stands alone, and is, so far as Britain is concerned, the only species of its genus. In treating of these, we have not thought it necessary to place them according to any particular method of arrangement. There is a certain relationship existing between the Moonwort and the Adders-tongue, and there is even a closer affinity between the two species of the last-named fern ; but we have not considered it necessary to place these

three species amongst the "fern groups" which we shall now proceed to describe. We propose to follow pretty closely the order observed by the botanists—arranging the thirty ferns which we have yet to speak of in seven groups. These we shall call the Polypodies, the Shield Ferns, the Buckler Ferns, the Spleenworts, the Bladder Ferns, the Woodsias, and the Filmy Ferns.

THE POLYPODIES.

CHAPTER I.

THE POLYPODIES.

I. THE COMMON POLYPODY.

Polypodium vulgare.

ONE of our most delightful ferns is the Common Polypody. It is positively refreshing and invigorating to look at it. We have good reason to think so, for as we write we have a splendid specimen standing beside us on our table, in a shallow seed-pan; and it does us good to pause now and then, and look at its glorious wealth of magnificent fronds. This same specimen was some few weeks since growing on the moss-covered wall which skirted a Devonshire brook. When we got it, in its wild state, its fronds had attained what is generally regarded as their *maximum* length,—namely, eighteen inches. And what exquisite roots! A perfect network of fibres, which, grow-

ing in the perpetual moisture engendered under the mossy covering of the wall, had crept along until they formed a sheet nearly a foot square. Then, the atmosphere of the brook had wonderfully helped the vigorous growth of the plant. We took our specimens from their damp and mossy habitat—carefully preserved them during our stay in Devonshire, by keeping them constantly moist—and then brought them to our London home. But we did not forget to supply as nearly as possible the conditions under which we found them growing in their natural home. Shade, moisture, and leaf-mould, are the three conditions of success for the Common Polypody. It requires no great depth of soil; but that soil must be leaf-mould. We brought the leaf-mould from Devonshire with our little stock of Polypodies. Some of these we planted out in our rockery. All have succeeded to perfection. But the grand plant before us has exceeded our most sanguine expectations. All we did was simply to strew the bottom of a small seed-pan—nine inches wide by three inches deep—with broken pieces of flower-pot; upon that

to place leaf-mould, and plant our Polypody therein, covering its rhizome lightly with the mould. We then placed the pan upon a large red clay saucer, and poured water on the roots until the saucer underneath was full. We continued this process from time to time, never allowing the rhizomes of our Polypody to become dry, and always keeping the saucer underneath the pan full of water. We have our reward in the grand development of the plant. The fronds have exceeded by one inch their *maximum* growth when we found them in their wild habitat. The seed-pan is crowned with a mass of rich, vigorous fronds, *nineteen* inches in length. The old fronds had all got broken off before we planted our specimen; so that its present ones are all the new growth under the conditions which we have described.

But now for some detailed description of this delightful fern. The Common Polypody is distributed very generally throughout the United Kingdom. In the forks of trees; on pollard trunks; on garden walls and old ruins; in the moist crevices of rocks in mid river; on moss-

covered hedge-banks ; almost everywhere on elevations above the ground level where accumulations of leaf-mould lie in hollows with pent moisture, will the Common Polypody grow, thriving most vigorously in situations where its roots are subject to the most favourable conditions of soil and moisture.

Most appropriately is it called the Polypody—the Many-Footed Fern—for its rhizomes creep in all directions under its shady covering. From these thick, fleshy rhizomes—about a finger's thickness—grow its matted fibrous roots. These, thread-like, penetrate almost everywhere in a horizontal direction, growing and spreading with the progress of the rhizomes, from the upper surface of which start the clustering fronds. These are simple, narrow, and strap-shaped in general outline, having a smooth, light green stem, sometimes about half the length of the entire frond, but generally somewhat less. On each side of the very prominent midrib, or rachis, the leafy portion of the frond is deeply indented or cut in, almost down to the midrib, giving the appearance of a row of leaflets on each side of the rachis, attached to a leafy

wing, extending along it lengthwise. These leaflets are somewhat narrow and lance-shaped, being terminated in a bluntish point. The entire frond, like its leaflets, tapers to a point, the leaflets becoming shorter and shorter to admit of this arrangement. The frond, in fact, has somewhat the appearance of a rough double-toothed comb. Under shelter, the Polypody is evergreen, its-delightful fronds remaining fresh and vigorous throughout the winter, and until a new crop has been supplied from the rhizomes in the succeeding spring. At the back, and on the upper portion of the frond, are the spores, in little round patches, unprotected by any covering. These, in the autumn, assume the beautiful appearance of little heaps of gold-dust, so richly coloured are they.

Essentially a forest fern is the Common Polypody, waving its delightful fronds aloft in the tree forks. But it has also wonderful powers of domestication. No fern is so plentifully vended in the London streets as our Polypody; for Epping Forest—that delightful strip of greenwood—furnishes the plant in thousands. In beautiful Devon-

shire it grows not only on garden walls, but on the housetops, under cottage eaves, and indeed almost everywhere ; and in cultivation it will smile refreshingly on your efforts to preserve it. It is, finally, though plentiful, *not* common ; and though simple, it is beautiful.

2. THE MOUNTAIN POLYPODY.

Polypodium phegopteris.

A GENTLE member—soft and graceful—of the charming family of Polypodies, is the Beech or Mountain Fern. Not possessed of the astonishing vigour of its relative *Vulgare*, it quails before the cutting autumnal winds ; and bending to the cold, becomes dormant during the winter, but reappears with dewy grace when beautiful May returns. In damp woods and mountains moist grows the Mountain Polypody. A slender rhizome it has, which creeps extensively, producing black fibrous roots. From the upper surface of its creeping rhizomes start its fronds, growing from a height of six inches to more than eighteen. There is a

great length of stem in this beautiful fern, the stem being sometimes twice as long as the leafy portion of the frond, the shape of which is triangular. The stem is exceedingly brittle and herbaceous, and its lower portion is covered with light scales. The leafy part of the frond is in colour a light delicate green, and it has a peculiarly downy appearance. On each side of the rachis is a row of leaflets, shortening as they near the point of the frond. These leaflets are narrow and tapering, terminating in a point, and the lowest and longest pair stand on the rachis or midrib of the frond, quite distinct from the others; but those on the upper portion of the frond are connected by a sort of leafy wing, which runs on each side of the rachis; and in this way the leaflets become gradually merged, until the frond ends in a serrated point. One peculiarity about this fern must be noted. The lowest, and also the longest, pair of leaflets are turned downwards, their points being directed from the rachis obliquely towards the ground, giving a curious appearance to the frond. Along the entire length of each

leaflet, under a sort of marginal arrangement, lie the spores, in little round unprotected clusters. The leaflets themselves are deeply notched or cleft, those on the lowest part of the rachis being each divided almost down to its mid-vein. But the notches on those leaflets which are higher up on the frond are not so deeply cleft.

The habitats of the Mountain Polypody are necessarily moist, the plant mostly delighting in an excess of moisture. Hence it will be found growing oftentimes immediately contiguous to waterfalls, because there the atmosphere is perpetually loaded with moist exhalations. It is not rare, except in Ireland, although in Great Britain it is found more abundantly in the northern than in the southern counties. It occurs in Ireland, but it is sparsely distributed throughout that country. In Scotland, and in both North and South Wales, it is to be found.

The Mountain Polypody is essentially a shady fern; for, less hardy than *Polypodium vulgare*, it will not bear so well the sunshine. It will grow readily, however, wherever you place it, if in a

moist and shady nook, whether on the open rockery, or indoors in pots, or under glass. It must have a soil very similar to that in which the Common Polypody delights. But with the leaf-mould some peat may be mixed with advantage, together with sand. Indeed, all soil for ferns needs an admixture of sand to keep the composition sufficiently light and porous. Peat is never found in the situations chosen by the Common Polypody ; but the Beech Fern, growing at lower elevations, comes within the range of peat. Hence the desirability of an admixture of peat in the compost used to grow this fern in cultivation. But leaf-mould is the chief vitalizing element in its growth.

3. THE THREE-BRANCHED POLYPODY.

Polypodium dryopteris.

THE charming colour of the Three-branched Polypody, or, as it is also called, the Oak Fern, is its most marked characteristic—a kind of light golden green that is most refreshing to look

upon, and is of a tint that is most exquisitely delicate and beautiful. The pretty little fern is in general very abundant in the localities where it is found; but these are chiefly away from the southern counties of England. In the north-western counties, in Wales, and also in Scotland, it is plentifully distributed. In Ireland it is rare. It is found in very much the same situations as the Mountain Polypody; and it delights in the same kind of soil, but it does not need quite the same amount of moisture which is demanded by *Polypodium phlegopteris*. Like all the Polypodies, it has a creeping rhizome. In fact, it is a wonderful traveller: and, in cultivation, is often found to come up in places where it is not expected, so extensively does it creep. From the under surface of the rhizome, or creeping root-stock, proceed its fibrous roots; and these oftentimes, when the fern is growing on a spongy bed of leaf-mould, become densely matted. From all parts of its travelling rhizome start the pretty and delicate fronds; sometimes in such profusion as to give to them the appearance of a

miniature forest of beautiful green. The average height to which the fronds grow is about six inches. But luxuriant specimens growing under favourable conditions attain several inches more than that. Most delicate and fragile are the frond-stems, which are generally as long again as the leafy portion of the frond.

The three-branched habit of this fern, which is so distinctly characteristic of it, is indicated in the incipient stage of the frond's growth ; for each branch is then rolled up in a little ball. At this stage, therefore, there is the curious appearance of the stipes with three wire-like branches at its top, having three little green balls at their tips. When the three little balls have become fully unfolded the entire frond is broadly triangular in shape. The branch in the centre of the three is in a line with the continuation of the main stem ; and at right angles with this branch are the two lateral ones : there being a clear space of stem between the point, where, at the top of the stipes, the three branches unite, and the commencement of the leafy portion of each branch. The largest of the

three branches is the central or uppermost one. Each branch of the Oak Fern is triangular in shape, and consists of pairs of leaflets, which at the base of the branch are connected with it by a short but distinct stalk. The lowest and the longest of these leaflets are again divided; towards their apex, however, the divisions becoming less deep. The other leaflets on the branch become shorter and shorter, and are simply notched near its top. On the back of the frond are borne the little round golden patches of seed.

The Oak Fern is a charming plant for cultivation. If planted on rock-work and sheltered from the sunshine it will grow luxuriantly. Indoors also its cultivation may be successfully pursued. It is the queen of the Polypodies.

4. THE LIMESTONE POLYPODY.

Polypodium calcareum.

TALLER, darker in hue, and hardier than its relative the Oak Fern, is the Limestone Polypody. From a height of six inches to a foot, and sometimes more, it grows, generally preferring a limestone soil; hence its name. The frond differs from that of the Oak Fern in not having the same arrangement of three distinct branches. Its colour, too, is very distinct, being a dark green, having, as we venture to think, a decidedly bluish tinge. The stem is usually about the same length as the leafy portion of the frond. The shape of the latter is triangular. The pair of branches at its base are considerably larger than the pair above it. The four branches are attached to the rachis, each by a short stem. But the branches—or rather they should be termed in this case the leaflets—above the two lowest pairs on the frond are closely attached to the rachis without the intervention of any stalk, and they gradually diminish in length, and finally blend

into the point of the frond. Placed on opposite sides of the stem, on the two lowest pairs of branches, are pairs of leaflets; the largest of which—those nearest the commencement of the rachis—being quite separated from the pairs next them, and themselves slightly notched or serrated. The succeeding pairs of leaflets are less and less notched, and less separated from the outer pairs, until they finally blend in the point of the branch in the same way as the branches blend at the point of the frond. The same gradual process is observable in the upper branches or leaflets of the frond, the lobes on the lowest of these branches being divided down to the midrib at the base of the branch, and less divided towards its point. The fourth pair of branches or leaflets from the commencement of the rachis is deeply notched only: the next pair above less notched and less distinct, and so on until, as before explained, they all blend in a point.

The Limestone Polypody has not a wide distribution. It occurs in localities in the north of England, and is found in some parts of the West

and in Wales. But from Scotland and Ireland it is almost entirely absent. It is, however, not an uncommon fern in the limestone districts where it grows.

It is very much hardier in its constitution than the Oak Fern, and will sometimes thrive well when placed on the sunny or exposed part of a rockery, or in the most sunny part of a greenhouse. The soil which suits the other Polypodies will suit *Polypodium calcareum*. But from its fondness for limestone it will be supposed that the presence of limestone in the soil is desirable. In cultivation, therefore, small pieces of limestone should be mixed with the soil in which it is grown. Like all the Polypodies it has a creeping rhizome, which travels half under the surface of the ground, its matted fibrous roots finding their way into the lower depths of the soil in which it grows, whilst from its upper surface grow the clusters of dark bluish-green fronds.

THE SHIELD FERNS.

CHAPTER II.

THE SHIELD FERNS.

I. THE HARD PRICKLY SHIELD FERN.

Polystichum aculeatum.

THE Hard, or Common Prickly Shield Fern, is one of the grandest and most robust of our native ferns, oftentimes reaching a height of three or four feet. Evergreen in character, its fronds survive the frosts of winter. It has a grand root-stock, from the under surface of which proceeds a dense mass of long, tough, fibrous roots. From its vigorous tufted crown this beautiful fern sends up a circle of fronds, which grow in shuttlecock fashion, their tips gracefully bending outwards. The stem or stipes of the Hard Prickly Shield Fern is somewhat short, but stiff and rigid, and covered with scales. The general outline of the frond is lance-shaped;

broad, however, at the base, and tapering upwards. The frond is divided into narrow tapering branches alternately placed along and on each side of the mid-stem or rachis. These branches are again divided into leaflets, each leaflet being wing-shaped and attached to the mid-stem of the branch by a short but distinct stalk. The arrangement of these leaflets is as follows:—The mid-stems of the branches—which, as before stated, run at intervals along each side of the rachis—are placed at right angles with the latter. On these branch mid-stems are arranged, in the most beautiful order, wing-shaped leaflets—one row above and one row underneath the stem. The first leaflet next the rachis, on the upper part of each stem, is much larger than the others, but with this exception all the leaflets gradually become diminished in size as they proceed from the rachis towards the point of each branch. This gradation of leaflets over and under the stem goes on until the branch ends in a point. Each leaflet is sharply spiked or toothed, and hence the prickly appearance of this

fern. The fronds are dark green in colour and rigid in texture. When the Hard Prickly Shield Fern has reached maturity in September, the backs of all its leaflets, in the upper portion of the frond, are densely covered with rich-brown clusters of seed-cases.

The Hard Prickly Shield Fern is very widely and plentifully distributed throughout the United Kingdom, growing chiefly in shady hedge-banks and on tree-covered hilly slopes. Few of our ferns are so robust as this species, and few can bear the sunlight better. But, although hardy in the extreme, it prefers—like all ferns—shade and moisture, and grows more luxuriantly under conditions where these are secured than when exposed to the sunlight or subjected to the open force of the winds. We found a grand specimen of *Polystichum aculeatum* on a steep slope in the woods surrounding Berry Pomeroy Castle, in South Devon. It was nearly four feet long; and its rigid, robust, prickly-looking, dark shining-green fronds made it a striking object.

In the garden, on the rockery, or in the house,

this fern will grow magnificently. It will thrive even in common garden soil; but it will thrive best in true fern soil—a peaty, loamy, sandy mixture.

2. THE SOFT PRICKLY SHIELD FERN.

Polystichum angulare.

NOTHING puzzled us more in our earlier fern-hunting excursions than the distinction between the Hard and Soft Prickly Shield Ferns. The two ferns are usually considered as distinct species, although some botanists rank them both as one species—*Polystichum aculeatum*—regarding *Angulare* merely as a variety. We have chosen to consider them as distinct species, and shall now indicate the points of difference which we have noted, showing at the same time up to what point the two ferns are like each other. In being generally distributed throughout the United Kingdom the one resembles the other. Both ordinarily grow in the same situations, and the fronds of *Angulare*, like

those of *Aculeatum*, are lance-shaped, and grow oftentimes to a length of four or five feet under favourable circumstances. In the Soft as well as the Hard Prickly Shield Fern, the branches of the frond are alternately placed along the rachis. The leaflets, too, are cut and stalked very much in the same manner in both ferns, and, in both, are of a wing-shaped form. In both, also, the branches of the frond are narrow and taper to a point.

But now for the distinctions we have noted. In a finely grown specimen of *Angulare*, the character which gives appropriateness to the designation of this fern is immediately recognised. The hard, rigid appearance of *Aculeatum* is absent. *Angulare* is, in fact, much less stiff in its mode of growth, and looks much more graceful and drooping. Its stipes is more densely covered with rust-coloured scales than is the case with *Aculeatum*, and these rust-coloured scales are scattered, also, over the whole of the back of the frond, being very prominently displayed on the rachis, and on the midribs of the branches. There is, consequently, a rich reddish tinge on the backs of the

fronds, and, indeed, in a great measure on both sides of the fronds of *Angulare*. The green colour of the leaflets in *Angulare* is also in general much lighter—oftentimes, in fact, a yellowish or golden kind of green—than is the case with *Aculeatum*. More than this, the bristles on the points of the leaflets are not so sharp-set or so prominent in *Angulare* as in *Aculeatum*. The fronds of the Soft Prickly Shield Fern are, too, more closely set together around the crown, more regular in their arrangement, and more gracefully and compactly placed shuttlecock fashion. So closely, indeed, are the frond-stems set together, and so densely clothed with rust-coloured scales, that, in well grown specimens, they form quite a cup or hollow, and give the appearance of a circular wall rising on the crown of the plant, and completely clothed with a beautiful drapery of reddish scales.

Under cultivation the same conditions will apply to *Angulare* as those which apply to *Aculeatum*. The latter, however, appears more hardy and better able to withstand the frosts,

doubtless on account of the more evergreen, rigid and vigorous character of its fronds. Both ferns are beautiful; but there is a soft beauty and a gracefulness of aspect about the Soft Prickly Shield Fern scarcely possessed in the same degree by its more robust relative, *Aculeatum*.

3. THE HOLLY FERN.

Polystichum lonchitis.

DIFFERING in many essential points from the other species of *Polystichum*, the Holly Fern has, nevertheless, a clearly defined relationship to *Aculeatum* and *Angulare*. It is, indeed, a singular-looking yet withal a beautiful fern; and its leaflets possess a sufficiently near resemblance to the leaves of a holly-bush to warrant the name which it bears. Sometimes this fern grows to a height of only six inches or so. At other times it may be found exceedingly vigorous, growing as long as eighteen inches, and under such circumstances very stiff and erect in habit. It is a

somewhat rare plant, but is found in certain localities in Scotland—some of the mountainous districts—and in Ireland, being in those countries more plentiful than in England and Wales. In England its distribution is confined to the northern counties.

A tufted root-stock; a short scaly stem; a frond narrowly lance-shaped, consisting of two rows of wing-shaped serrated leaflets, diminishing in size by gradation towards the tip of the frond. Such is the Holly Fern. Its peculiarity is that it has no branches like the other two species of its kind, *Aculeatum* and *Angulare*; but one simple rachis clothed on each side with a row of spiny leaflets. In fact, it has a sort of general resemblance to a single branch of *Polystichum aculeatum*. One peculiarity about the leaflets of this fern must be noticed. The upper portion of each one next the rachis projects a little over the leaflet immediately above it. The leaflets are attached to the rachis by a narrow point; but without the intervention of a stalk.

The fronds of the Holly Fern are robust and

evergreen in character—dark green in colour—rigid, and prickly looking. They withstand the frost, and often remain until the new spring fronds are produced. It may be grown in the fern-garden, or in the house; and the soil it needs should be composed of light loam, peat, and sand. It is said to be difficult to cultivate, especially in the west of England; but we have seen it successfully grown there, in the open garden. It is an exceedingly handsome fern, and is well worthy of the utmost care which can be bestowed upon it.

THE BLADDER FERNS.

CHAPTER III.

THE BLADDER FERNS.

I. THE BRITTLE BLADDER FERN.

Cystopteris fragilis.

THE name given to the delicate and beautiful ferns included under the genus *Cystopteris*, is on account of the bladder-like coverings of the spores on the backs of their fronds. The fragile Bladder Fern is ordinarily seen about six inches in height ; but it sometimes grows to the height of a foot or more. The frond-stem is tender, herbaceous, and very brittle, having just a few light-coloured scales at its base. The fronds grow from a tufted root-stock, and come up in clusters : the crown of the root-stock spreading to admit of this. The shape of the frond is lance-like, tapering

slightly to the base, as well as tapering gradually to a point at the top. The lowest pair of branches on the rachis is shorter than the pair immediately above it; but from that pair to the point of the frond the successive pairs gradually diminish in length. The pairs of branches on each side of the frond are not placed exactly opposite one another, but according to a somewhat irregular arrangement. The branches themselves are distinctly lance-shaped; and on each side, above and below them, is a row of leaflets, egg-shaped in general outline, and notched or saw-edged. On the back of the fronds the little bladder-like clusters of seeds are frequently so plentiful that they become confluent. Although somewhat rare in Ireland—except in two or three localities in that country—it is nevertheless widely distributed throughout the rest of the United Kingdom; being, indeed, in some places very abundant.

The delicate Brittle Bladder Fern is easily grown. Give it leaf-mould, peat and sand, shade, and an abundance of water, and whether—with

such soil and subject to such conditions—you place it in a cool stony nook of your rockery, or in pots, indoors, it will equally thrive. If you grow it in pots, plant it amongst some stones, not forgetting, however, to give it the appropriate soil. The more nearly you can approach, in your treatment of it, its natural conditions of growth, the more certain is your prospect of successfully cultivating it.

2. THE ALPINE BLADDER FERN.

Cystopteris regia.

THIS is an exceedingly rare species of the British Ferns. Similar in some respects to the Brittle Bladder Fern, it differs from the latter chiefly in size, growing ordinarily to a height of only four or five inches; but sometimes becoming a few inches taller. It has a short brittle stem, somewhat scaly at the part nearest the ground. In this species the branches of the frond, although similar to those of *Fragilis*, are placed more directly opposite each other. The stipes is shorter

than in *Fragilis*: the frond-branches are also shorter, corresponding with the smaller size of the plant, and instead of being ordinarily lance-shaped, the general form of the branches may be called either bluntish lance-shaped, or egg-shaped. In the same way the leaflets on the branches are also somewhat egg-shaped; but they are much more deeply cleft or serrated than is the case with the leaflets in *Fragilis*; so deeply cleft, indeed, sometimes, that the leaflets are divided into lobes or divisions.

The Alpine Bladder Fern is an exquisitely beautiful little plant. It will grow under cultivation as readily as *Cystopteris fragilis*, and may be planted either in the open air, on the fern rockery in a cool shady spot, in pots in the house, or under the protection of a covering of glass. For soil the lightest composition must be made. Peat, silver-sand, light friable loam, and leaf-mould, in equal proportions. If planted in a pot there should be in the bottom of the pot a thick stratum of broken flower-pot or soft broken bricks, together with some pieces of charcoal,—the charcoal being

introduced to keep stagnation from the roots of the plant by the filtration of the water through the drainage of broken flower-pot or bricks. Like *Cystopteris fragilis* our little *Cystopteris regia* has a tufted root-stock, from which spring up clusters of beautiful, delicate, herbaceous, charmingly-green fronds.

3. THE MOUNTAIN BLADDER FERN.

Cystopteris montana.

ONE of the very rarest of our rarer native species is the Mountain Bladder Fern, found only in one or two localities in the Highlands of Scotland. It has a creeping root, which finds its way underneath the moss and other vegetation, amongst which the charming little plant grows. Its fronds are remarkably distinct from those of the other species of Bladder Ferns which occur in this country. The stipes is about twice the length of the leafy portion of the frond, the entire length of which is, however, rarely found to be more than some eight

inches. The frond, from the commencement of the rachis, has a very distinct three-branched appearance, from the circumstance of the lowest pair of branches—extending horizontally to right and to left—being much larger and longer than the higher ones. These lowest branches are again divided, each having above and below its mid-stem a row of leaflets. But the upper row of leaflets, near the main rachis, are much shorter than the lower row, and are deeply cleft or serrated. The two leaflets of the lower rows nearest the main rachis are so much developed, that at and near their base they are again divided into lobes, which in their turn are serrated. Curiously enough, however, the disproportion between the size of the leaflets on the upper and lower sides diminishes towards the point of the branch, and the process of division into lobes is also reduced gradually, so that near the tips of the branch the opposite leaflets are equal in size, and being then much smaller than those at the base of the branch, are not again divided into lobes, but are simply jagged or serrated at their edges. Leaving now

the lowest pair of branches on the frond, and coming to those immediately above them, we find that this pair, besides being much smaller, has not the same disproportion between the upper and lower leaflets, although those of the upper row are somewhat shorter than those of the lower one. On this second pair of branches the leaflets near the main rachis are more deeply cleft than those away from it towards the point of the branch. The same process of gradual diminution goes on towards the highest point of the frond, branches becoming shorter and less divided until they merge into leaflets, which in their turn become shorter, smaller, and less cleft or serrated, until they merge in the extreme tip of the frond itself. The general shape of the frond, including the whole of its leafy portion, is triangular; each of the lowest pair of branches is also triangular; the other branches are first lance-shaped, and as they merge into leaflets, these become somewhat egg-shaped. The distinct lobes of the leaflets, near the main rachis on the lower part of the first pair of branches, are also somewhat egg-shaped.

The same conditions of soil, moisture, and situation required by *Cystopteris regia* will avail for the successful culture of the Mountain Bladder Fern. Beautiful and delicate in the extreme, it will well repay all the care and attention which may be lavished upon it. If it could be planted near a fountain, where by some arrangement water could be made to trickle over its roots, or the fountain spray could envelop the whole plant, then the natural conditions under which it grows most luxuriantly would be very nearly supplied, and the growth of this exquisite fern would be all that the fern cultivator could wish.

THE WOODSIAS.

CHAPTER IV.

THE WOODSIAS.

I. THE OBLONG WOODSIA.

Woodsia ilvensis.

RARE as beautiful, and beautiful as rare, are the Woodsias. Tiny plants are they, seldom reaching a greater length, from crown of root to tip of frond, than four or five inches. A tufted caudex, or root-stock, from which grow up in thick clusters the delicate fronds. These have short, scaly stems, are narrowly oblong, and somewhat blunt-pointed, widest at the base, and gradually tapering. On each side of the rachis is a row of leaflets, somewhat egg-shaped, attached to the rachis without the intervention of a stem; at first in opposite pairs, but ultimately, towards the point of the frond, in alternation. These leaflets are

deeply cleft or lobed in the lowest part of the frond, the divisions diminishing in depth as the leaflets, nearing the point of the frond, become smaller and smaller. Finally the leaflets merge in the frond-tip, which is simply notched. The backs of the fronds are clothed to a greater or less extent with minute scales and shining hairs or bristles. Amongst these hide the spores.

In both of our species of *Woodsia* the stipes is jointed at a distance of little more than half an inch from the crown of the root. When on the approach of winter the fronds fall off and decay, their separation from the plant takes place, not close to the crown, but at the spot where the joint already mentioned is placed; and as the stems below the joint stand firm, a cluster of little frondless stems remains for some time attached to the crown.

The Oblong *Woodsia* is only to be found in one or two localities in Scotland, in one locality in the north of England, and in one or two parts of North Wales. No specimen has been seen growing wild anywhere in Ireland.

In pots, in cool nooks of the open-air rockery, or under a covering of glass, this beautiful and delicate little fern may be grown. Complete shade, moisture pure and percolating, must be supplied. Light, sandy, peaty soil must be used, and the fern planted carefully amongst little blocks of stone.

2. THE ALPINE WOODSIA.

Woodsia alpina.

Alpina is a sort of diminutive likeness of *Ilvensis*. Narrow, blunt-pointed fronds, shorter and narrower than those of *Ilvensis*. From a tufted crown these little fronds are thrown up, jointed just a little more than half an inch from the ground. The leaflets along the rachis are somewhat shorter and blunter than those of *Ilvensis*, are not so much notched, and are placed on each side in alternation. But they get smaller towards the top of the frond, by a somewhat slow process of gradation, finally blending, however, at its ex-

treme point. The scales and shining hairs at the backs of the leaflets are not quite so thickly scattered as in the case of the Oblong Woodsia. But the spore clusters are often crowded.

Both the Oblong and the Alpine Woodsia grow on damp rocks, oftentimes inaccessible. In cultivation, the conditions under which they grow in a wild state must not be forgotten. They should, therefore, whether planted in the cool open rockery, in a case, or in pots, be planted amongst blocks of stone, as we have recommended in the case of *Ilvensis*.

The Alpine Woodsia is exceedingly rare. It appears to occur in the same districts as those of its Oblong relative. But it has been suggested that this fern, like many others which are partial to almost inaccessible habitats, may not, perhaps be so rare as is generally supposed.

THE BUCKLER FERNS.

CHAPTER V.

THE BUCKLER FERNS.

I. THE MALE FERN.

Lastrea filix-mas.

THE Buckler Ferns include some of the finest of our native species. One of the most plentiful and widely-distributed of these is the Male Fern, also called the Common Buckler Fern. The Male Fern derives its designation from its extremely vigorous and robust manner of growth. The texture of its dark green fronds has a somewhat more rigid appearance than that of most ferns. It grows in woods and on hedge-banks, on hill-sides and by the water's edge,—almost everywhere in fact; now exposed in dry situations to the full power of the sun, and now hidden away in almost impenetrable shade. The Male Fern reaches an average height of between two

and three feet; but, under favourable circumstances, it sometimes grows to a height of four feet. Then, indeed, it is a really beautiful object: its fronds thrown up shuttlecock fashion around its fine tufted crown, and so neatly and closely arranged as to present inside a circular wall densely clothed with scales, and resembling very much in that respect the appearance presented by the Soft Prickly Shield Fern. But the tips of the fronds of the Male Fern have not the same drooping habit as *Polystichum angulare*; being on the contrary, thrown up, as it were, defiantly. Perched on the open side of a high embankment, a grand specimen of the Male Fern, fully developed, with all its fronds mature, presents a peculiarly striking appearance.

The frond of the Male Fern is lance-shaped—broadly so—tapering up and down; towards its point, and towards its base. It is, therefore, broadest at its centre. The basal tapering is not carried to a point as at the top of the frond; but merely admits of the lowest leaflets being somewhat shorter than those in the centre.

The stem, or stipes, is perhaps about one quarter the length of the leafy portion of the frond, and is covered thickly with chaffy scales. These scales are also carried along the rachis or mid-stem of the frond. The leaflets arranged in alternation on each side of the rachis—longest in the middle of the rachis, shorter at the base, and shortest at the top—are narrow and tapering, and are symmetrically divided into oblong blunt-pointed lobes; some of them—the largest ones, and those nearest the rachis in the lower part of the frond—being quite separate from each other,—that is to say, divided quite down to the mid-stem of the leaflets; the others being attached to those next to them by a leafy wing, and those nearest the tips of the leaflets being nearly cleft between. The lobes are broadest at the base, with rounded blunt points. There is a smooth, shiny, rigid, leathery appearance about the fronts of the lobes, whilst their backs have a duller, rougher surface. The spores are produced on the backs of the leaflets, usually in the upper portion of the frond; and each leaflet is thickly studded with the little kidney-shaped

cases which contain them. In the early summer, and until each frond has reached its full development, these cases are green; but they soon turn to a rich dark reddish-brown colour, and add to the strikingly ornamental appearance of the frond.

The vigour and hardiness of the Male Fern are so great, that in sheltered situations the fronds will oftentimes withstand the winter, remaining fresh and green throughout, and retaining their verdancy until the fresher green of the new spring fronds diminishes their lustre by comparison.

The root-stock of the Male Fern often becomes very much elongated, and resting horizontally on the hedge-bank or other sloping situation on which it may be placed, sends out its tuft of fronds from one end, whilst the other is plunged in the soil, from whence its matted, wiry, fibrous roots gather the essential moisture.

No fern can be more easily cultivated than the Male Fern. Its hardy character renders it especially suited to be an inhabitant of the open-air rockery, where it will brave the frosts and snows of winter. It can stand sunshine; but, like

the more delicate of its kind, it most loves the shade. Peat, rich loam, and sand, with leaf-mould, should compose the soil in which it is grown, whether in the garden or in the house. Wherever this vigorous and beautiful fern grows, it will impart a delightful and exhilarating freshness to its surroundings.

2. THE BROAD BUCKLER FERN.

Lastrea dilatata.

ABOUT the fronds of this really handsome fern there is a peculiarly crisped, curled appearance, which renders it very easily recognizable. *Lastrea dilatata* is the finest of the *Lastreas*. The stems of the fronds are often purple hued, and they are covered with dark brown scales. At their lowest part they are thicker than they are above. The leafy portion of the frond is, in its general outline, lance-shaped—broadest at the base, and tapering upwards. On each side of the mid-stem, or rachis, are branches placed opposite each other, or nearly so, in pairs, and becoming shorter and shorter as

they near the top of the frond, in which they are finally merged. The lower pairs of branches, besides being larger than those above them, are also broader. The branches are again divided into leaflets, and these in their turn are either again divided or deeply cleft, and the lobes or smaller divisions, whether of branches or leaflets, are serrated. One peculiarity must be noted. The leaflets on the lower side of the mid-stem of the branches are much longer than those on the upper side; but this disparity gradually decreases towards the top of the frond. It is, however, remarkably prominent on the lowest pair of branches, and the difference between the upper and lower leaflets is most marked in the case of the four immediately next the rachis on the lowest pair of branches. Even on these branches the difference between upper and lower leaflets gradually decreases towards the point of each branch, near which they are, both above and below, almost the same in size.

On every part of the frond the lobes are curled backwards,—sometimes almost doubled back; and

this arrangement gives a singularly graceful and beautiful appearance to the fronds. The whole plant, too, has a broad, arching, drooping habit, and when it has reached its highest state of development, there is something singularly and strikingly elegant in its appearance.

The Broad Buckler Fern is not, perhaps, quite so plentiful as the more erect and robust-looking Male Fern ; but it is very abundant, and is pretty widely distributed throughout Great Britain. It grows in woods, shady lanes, and sheltered hedge-banks, and also on the banks of streams and rivers, sometimes to a height of so much as five feet. Being as hardy as it is elegant, it is admirably adapted for the open rockery, if kept in a cool and shady corner. It should have plenty of room to display the graceful, arching, spreading habit of its fronds. For soil, sandy peat and leaf-mould. But although it is especially adapted for the garden rockery, it will grow readily indoors, either in the green-house or in pots. Abundant moisture and shade, however, are essential to its successful growth wherever it may be grown.

3. THE HAY-SCENTED BUCKLER FERN.

Lastrea recurva.

AS its name indicates, the peculiar characteristic of this delicate and beautiful fern, is the exquisite scent which is given forth from its fronds. Abundant in some localities, especially in the west of England and Ireland, it is rare in others. It is somewhat rare in Scotland. In parts of Devonshire it is very plentiful. Yet, sometimes a large district might be searched for miles around without the search resulting in the discovery of a single specimen. It grows in damp woods and on shady hedge-banks. We remember with pleasure an excursion which we took from Totnes, in search of the Hay-scented Fern, under the guidance of Charles Hillman, of Torquay, a "fern man" of rare experience. The nearest habitat was five miles distant from Totnes, and we wended our way up hill and down dale, through five miles of ferny lanes, until, arrived at the brow of a hill, we began to descend to the lower ground along a narrow road, shut in by high fern-covered

embankments, which, with the trees which crowned their tops, cast dark shadows on the narrow carriage-way. We were close upon the habitat of the fern we were seeking; but although carefully searching the hedge-bank as we neared the spot we could not find a stray specimen. All at once, however, our guide stopped, and pointing to the hedge-bank on the right invited us to search. We had arrived within the charmed circle. The bank was literally clothed with splendid specimens of *Lastrea recurva*, their fronds revelling in the twilight of the hedge, and their roots plunged into the rich soft leaf-mould of the bank.

The inexperienced fern-hunter is very likely to mistake small plants of the Broad Buckler Fern for the Hay-scented Fern. But although there is a general resemblance between the two, there are peculiarities about the latter which render it easily recognizable. The general form of the frond, the form of the branches, and the peculiar elongation of the leaflets on the under part of the mid-stem of the lower branches of the frond are characteristic of both *Dilatata* and *Recurva*. But there is this

marked distinction ; that, whereas the lobes of the leaflets in *Dilatata* are curled or crisped backwards, as if more completely to shelter or hide the spores, those of *Recurva* are on the contrary bent somewhat in the opposite direction, or forward. The lobes in *Recurva* are, too, of a more delicate texture than those of *Dilatata*, and whilst the colour of the mature fronds of the latter is dark green, those of the former are of a lighter shade, with a kind of light-bluish tinge. In *Recurva*, when the plant is mature in the autumn, the whole under surface of the frond is thickly studded with the seed-cases which contain the spores. But the exquisite hay-scent of *Recurva* at once decides the doubting fern-hunter. Take a mature or even a faded frond in the hand, and crush it between the fingers, and the delightful odour which will be instantly emitted will quickly decide the species, if it is a frond of *Recurva* that you hold !

The Hay-scented Buckler Fern attains an average height of from eighteen inches to two feet. Like all the Buckler Ferns it grows readily under cultivation. But it must have

abundant moisture and complete shade, and sandy peat and leaf-mould for soil. Then it may be grown successfully in the open rockery, in the fern case, or in open pots in the house.

4. THE RIGID BUCKLER FERN.

Lastrea rigida.

THIS fern is local in its distribution; very rare in Ireland, and not found at all in Scotland or Wales. But in some parts of the north of England, especially in the mountainous limestone districts, it is found in abundance. It appears to prefer a limestone soil: and in cultivation it is beneficial to water it with lime-water. When growing wild it is usually found from one to two feet high. Its fronds are somewhat narrow and triangular, with branches alternately placed on each side of the rachis. The branches are lance-shaped, having on each side, over and under the stem, a row of leaflets, largest next the rachis, and becoming shorter towards the point of the branch.

These leaflets are narrow and blunt pointed, each one somewhat deeply notched or toothed, being in this way divided into segments, which are finely saw-edged.

The Rigid Buckler Fern is a very elegant plant, and like the other *Lastreas* admirably adapted for cultivation. In the sandy peat, loam, and leaf-mould used for growing this beautiful fern, some pieces of limestone should be placed ; and it must have an abundance of moisture.

5. THE PRICKLY-TOOTHED BUCKLER FERN.

Lastrea spinulosa.

THERE is in this fern a general resemblance to the Hay-scented Buckler Fern. The fronds grow erect on somewhat thin stems, which in length are about equal to the leafy portion. The general shape of the frond is triangular, the widest part being at the base, where the branches are also broader as well as longer than those higher up ; and the same kind of division of the leaflets

of the branches is observable as in the Broad Buckler Fern. The broadness of the lowest pair of branches is occasioned by the leaflets below the mid-vein of the branches being considerably longer than those above ; and this inequality, as in the case of *Lastrea dilatata*, diminishes towards the point of each branch, and towards the apex of the frond. Indeed, the description of the cutting, indentation, and general arrangement of the leaflets and lobes, is very similar to that of *Dilatata*, the difference in the case of *Spinulosa* being that the leaflets, instead of being curled back, as in *Dilatata*, are straight. The edges of the lobes, too, are spiny and sharply serrated. The fronds do not attain anything like the same length as those of *Dilatata*. One peculiarity which will be easily noted about *Spinulosa* is, that the tops of the incipient fronds, in making their appearance just above ground, are naked and green in colour, instead of being covered with chaff-coloured scales, as in the case of *Dilatata*.

The Prickly-toothed Buckler Fern grows in boggy situations, delighting in an atmosphere of moisture,

and in a saturated soil. We found it in Devonshire, in a bog which lay under a wood at the bottom of a hill. There it was growing at the foot of the mounds of moss surmounting the roots of the sedge-grasses.

In cultivation it must have incessant moisture, especially at its roots, where it should be sodden. Peat and leaf-mould should compose the soil—peat preponderating. It is a really beautiful fern, and will thrive in the open rockery, in the greenhouse, or indoors, if grown under the conditions which have been described.

6. THE MOUNTAIN BUCKLER FERN.

Lastrea montana.

Two peculiarities, strongly marked, distinguish this beautiful and symmetrically-formed species from the rest of the group amongst which it is ranked. Ordinarily, when ferns are bruised in the hand, a strong starchy odour is emitted. It has been already mentioned, however, that in the case

of the Hay-scented Buckler Fern, there is emitted, when the fronds are bruised, an exquisite scent of hay. When the Mountain Buckler Fern is crushed or rubbed a very strong balsamic odour is emitted; and this is a characteristic which renders it easily recognizable. There is further an unmistakable mark of recognition in the form of its fronds. About these there is a sort of general resemblance to the Male Fern, except in one particular. In the Male Fern the frond tapers to a point upwards; but not in the opposite direction, although the branches at the base of the frond are sometimes a little shorter than those in the centre. But the branches of the frond in the Mountain Buckler Fern taper downwards towards the base, almost as much as they taper upwards; the branches in the lowest part being nothing more than the tiniest leafy excrescences on each side of the rachis. This continuation of the leafy portion of the frond downwards necessarily leaves but a very short stipes to the Mountain Fern; and this short stipes is covered with rust-coloured scales. On the rachis of the frond in

this fern, the branches are placed on each side in pairs. Each branch has a row of lobes on its upper and under side, clearly divided from each other, but not divided quite down to the mid-stem of the branch. The branches, which are narrowly lance-shaped, have thus the appearance of being very deeply notched or toothed—the points of the lobes being bluntish or round-pointed—and their bases, being run together, give the appearance of a leafy wing on each side of the mid-stem of the branch. Towards the point of the frond the branches diminish in length, and become less in breadth, the lobes becoming gradually less and less deeply cut in, until they are finally mere serratures; which, in turn, disappear as the branches merge in the point of the frond, which then itself becomes notched, finally ending in a point. A perfectly grown specimen of the Mountain Buckler Fern has an extremely elegant aspect. It is—although in some of its features like the Male Fern—more delicate in its general appearance than that species: there is a more delicate tint of a lighter, more golden green about

its fronds, and the more regular arrangement of its branches gives to it greater symmetry, grace, and beauty.

The Mountain Buckler Fern, as its name indicates, is found—sometimes in great abundance—chiefly in mountainous districts; sometimes in woods, where it grows in a state of great luxuriance; and sometimes fringing the banks of mountain streams. In the north, and in some other parts of Scotland, it often densely clothes the mountain-sides. It has a wide distribution throughout England, Wales, and Scotland; being, however, a species of some rarity in Ireland. Peaty soil will suit it well; and it may be grown in the fern-garden, or in the house; but wherever it is planted it must have shade and abundant moisture.

7. THE MARSH BUCKLER FERN.

Lastrea thelypteris.

THE most delicate in texture and fragile in habit of all the Buckler Ferns is *Lastrea thelypteris*. As

its name indicates it grows in marshes, preferring those which are exceedingly boggy and wet, especially when the bog is immersed in the deepest shade. Ordinarily it grows to a height of a little more than a foot, but occasionally it grows to more than double this height. The fronds are of two kinds—barren and fruitful; the fertile ones being taller than the others. The stem of the barren frond is long, thin, green in colour, and exceedingly fragile. The leafy portion is lance-shaped. The rachis is thin, green, and fragile like the stipes, and on each side of it at intervals,—sometimes opposite in pairs, and sometimes placed irregularly—are the branches, narrow and lance-shaped, but blunt-pointed. These branches are again divided—not quite down to their mid-stems, but almost so—into oblong blunt-pointed lobes or leaflets. The divisions between the lobes are very regular and symmetrical, and go down so deeply between the lobes as to leave only a narrow leafy wing or expansion along the upper and under part of the mid-stems.

About the entire aspect of the Marsh Fern there

is something exceedingly delicate and fragile, and the colour is a most exquisite light shade of green. We shall not easily forget our first adventure in search of the Marsh Fern. We had arranged to meet Charles Hillman, already alluded to, at Newton Abbott, whence he was to pilot us to the Decoy Bog, in the vicinity of that town. Unfortunately when we arrived at the Newton Abbott station the rain began to pour down. But we had set our minds on *Thelypteris*, and, nothing daunted, we started for the Decoy Bog. The bog lies under a wood at the foot of a furze and Bracken-covered slope. Arrived at the top of the slope we had to wade through the tall and dripping Bracken breast high, pushing the ferns aside with one hand, and holding our umbrellas in the other. We soon reached the bog, but there our difficulties had only commenced. Interspersed throughout the extent of the bog, which lay under the shadow of the wood which covered it, were some moss-covered mounds, chiefly occurring at the roots or over the stumps of trees. It was necessary to step with the utmost caution from moss-covered mound to moss-

covered mound, holding on, as we did so, to the trees; otherwise, we should have been precipitated into the bog and should have sunk we know not where. Wading into this wooded morass we at length came to a spot where the substance of the bog was more than usually liquid. Here we found *Thelypteris* growing in great abundance, the creeping rhizomes immersed in the black bog water, above which the delicate light-green fronds were beautifully waving. The scene at this spot was singularly wild and beautiful. Above us, the leafy canopy of the wood; beneath, the dark bog, its surface exquisitely diversified by the delightful fronds of *Thelypteris*; around, on mossy clumps, grand masses of sedge-grass, charmingly green in colour, and picturesquely dotted about. From out the mossy mounds peeped pretty specimens of *Blechnum spicant*; and scattered here and there some plants of the rarer *Lastrea spinulosa*.

The Marsh Buckler Fern has a thin, but extensively creeping rhizome, from all parts of which spring the fronds. The rhizomes rejoice in the almost liquid peaty soil of the bog, the soft pulpy

nature of which encourages the travelling propensities of the roots. Few ferns like to be sodden in this manner at their roots like *Thelypteris*. In cultivation the nearest approach to the natural conditions which have been described must be attempted. If planted in the rockery the lowest tier should be appropriated for its roots, which, when practicable, may be kept immersed in water or perpetually soddened peat soil. If it be kept indoors in pots these must stand in pans of water, and under such conditions you may successfully grow this beautiful fern.

THE SPLEENWORTS.

CHAPTER VI.

THE SPLEENWORTS.

I. THE FORKED SPLEENWORT.

Asplenium septentrionale.

THE Spleenworts form a charming group, many of them being very small. But all are evergreen. They all delight to grow in rocky or stony crevices, sometimes on walls—disporting themselves in the sunshine, but always preferring shade and moisture for their fibrous roots. The little waving tufts of the smaller species conspicuously ornament the rocks or walls on which they grow, whilst the larger kinds wear their beautiful fronds with a nobler grace.

The Forked Spleenwort is one of our rarest ferns. It grows to an average height of two or three inches only, seldom exceeding six. Frond

and stem are almost blended, the leafy part of the frond being merged into the stem by means of a sort of narrow leafy wing. The fronds, which are thrown up in little tufts around the crown of the plant, are divided into sometimes two and sometimes three forked divisions, somewhat club-shaped, narrow at their base, and broadening upwards, where, being widest, they are each jagged or slightly forked, the tips of the segments presenting sharp points. On the backs of the short fronds grow the spore-cases, which, when quite ripe, run together and form one mass.

When growing wild on rocks the Forked Spleenwort becomes densely tufted, and spreads into a mass of crowns, which throw up a little forest of fronds. In cultivating this fern, sandy peat and old fragments of mortar should constitute the soil. With this should be interspersed pieces of freestone or sandstone, and the roots should be planted between fragments of stone so as to imitate, as nearly as possible, the conditions under which it is found growing on its native rocks.

2. THE ALTERNATE SPLEENWORT,

Asplenium germanicum.

A RARE and tiny fern is the Alternate Spleenwort; even rarer than the one last described. Like the Spleenworts in general, it grows in rocky clefts, but has only been found in a few localities in England, Wales, and Scotland. It does not grow in Ireland. From the crown of its tufted root-stock spring up a mass of little fronds, which seldom grow to a height of more than six inches, though usually they are not so long. The leafy portion of the little frond consists of a mid-stem or rachis, on each side of which, placed alternately, are a number of wedge-shaped leaflets, connected with the rachis at their narrowest part, and being consequently broadest at their tops. The tops are irregularly cleft or toothed, presenting a series of sharp points. The frond ends in a leaflet larger than those which are placed alternately along the rachis; but this final leaflet is, like the others, sharply notched or toothed.

The same method of cultivation recommended

for the Forked Spleenwort will suit its near relative *Asplenium Germanicum*, namely, sandy peat and leaf-mould for soil, and an arrangement of little pieces of sandstone or freestone in the pot, or in the cleft of the rockery where it is grown.

3. THE RUE-LEAVED SPLEENWORT.

Asplenium ruta muraria.

OF all our native ferns the Rue-leaved Spleenwort or Wall-rue is, perhaps, the most unpretending in appearance. Yet it is a most interesting little fern, and will well repay study and care. It is very diminutive, sometimes only growing to a height of about one inch, but when growing under very favourable conditions, in a wild state, it will reach a length of several inches. It is widely distributed, loving to fasten itself on old walls, rocks, or the sides of bridges of all kinds, spanning water. Often it is found growing on church walls and the walls of dwelling houses. It is, indeed, a familiar little fern, and is frequently

seen flourishing in the midst of towns, seeming, indeed, to love the society of man. But the secret of its preference for buildings of various kinds is its fondness for old mortar. When growing on walls the finest specimens are always those which are found at the top of the walls, just beneath the coping stone or crowning bricks, which serve as a protection for the crown of the Wall-rue. Between the bricks of walls and in the crevices of rocks the little fern inserts its wiry fibrous roots, which suck in the moisture pent by the stony covering, and revel in the combination of old mortar and deposits of leaf-mould formed by dropping leaves. The Wall-rue prefers to grow—root-stock, crown, and rootlets,—horizontally, a position rendered necessary by the habit of the little plant in growing between the mortar lines of walls. From its tufted crown the tiny fronds shoot out in dense clusters. Stem and leafy part are about equal in length. The tiny branches of the frond are placed alternately on each side of the rachis, each branch being again divided into little diamond-shaped lobes. These

lobes are thick and leathery in texture, and of a dark shining green colour. When the spores ripen they usually become confluent, so that in the autumn the backs of the leaflets are thickly covered with rich brown masses of seed. Evergreen in habit, the fronds of the little fern endure through the winter.

Some difficulty is experienced by amateur fern growers in the cultivation of the Wall-rue, a difficulty which it is to be feared arises chiefly from want of care in sufficiently studying the natural conditions under which it thrives. Too frequently the fern is not properly transplanted. Perhaps only a third of its little fibrous roots are secured when it is taken from its natural habitat. In such a case failure in growing it is almost inevitable. It is often very difficult to transplant it without doing injury to crown or root, and, indeed, it is generally impossible to obtain it entire and uninjured without removing the stones amongst which it is growing. But this difficulty overcome, and the tiny plant secured intact, it will be generally found comparatively

easy of cultivation. It should be planted between fragments of stone in such a manner as to imitate, as nearly as possible, its natural conditions; and for soil it must have sandy leaf-mould and old pieces of mortar.

4. THE BLACK MAIDENHAIR SPLEENWORT.

Asplenium adiantum nigrum.

THE Black Maidenhair is, perhaps, the most elegant of the Spleenworts, chiefly on account of the elaborate and beautiful manner in which its fronds are divided. It grows from a very tufted root-stock, and throws up thick clusters of fronds, which vary considerably in height. Sometimes, when growing on walls in somewhat dry and exposed situations, it may be found no more than an inch or two or three inches high. But when it is in situations more congenial to it, and under conditions such as will be presently described, it attains a height of from eighteen inches to two feet, and possesses an elegance almost

beyond description. The young fronds and their stems are, when first starting from the root-stock, ordinarily light green in colour. But as they attain maturity they become—the latter a dark rich purple, and the former, in their leafy part, a dark shining green. In luxuriant specimens the stem of the frond is as long, often longer, than its other part. But in small specimens found growing on walls the stem is usually much shorter than the rest of the frond. The latter, in its leafy part, is triangular in shape; and alternately placed on opposite sides of its rachis or midrib are a number of triangular-shaped branches, gradually, however, as they diminish in size and length towards the point of the frond, becoming less and less distinctly triangular, until the branches near the extreme point of the top are mere leaflets, bluntly club-shaped and indented, and finally merging in the tip of the frond. The lowest branches on each side of the frond, being distinctly triangular, are again divided into triangular-shaped leaflets, which follow the same arrangement towards the point of the branch, as the

branches follow, as already described, towards the point of the frond. The triangular-shaped leaflets at the base of the lower branches of the frond are, in luxuriant specimens of the Black Maidenhair Spleenwort, again divided into leaflets—at their lower extremity these ultimate divisions being beautifully notched or serrated. Depending on the situation in which it grows, the fronds of the Black Maidenhair Spleenwort are either very thick, rigid, and leathery in texture, or of a softer and more drooping habit. The plant is very decidedly evergreen, its fronds, springing up in May or June, continuing to grow until September or October, and from that time, when it has reached its maturity, lasting until the ensuing spring. When in its perfectly mature state, in the autumn, the spores, which have clustered at the back of its fronds, become confluent and densely cover the whole under surface of the leaflets. Being then of a rich dark brown colour, they finely contrast with the dark shining green of the plant, and strikingly add to its handsome appearance.

The Black Maidenhair Spleenwort is widely distributed over the United Kingdom. It occurs plentifully on walls, old ruins, and river bridges, growing, like the Wall-rue, in the interstices between the stones. It also grows on old stony hedge-banks, and it is in such situations, when favoured by a rich soil of leaf-mould which may have collected in the crevices formed by the loosely arranged stones, and when sheltered by overhanging bushes, that it attains its most luxuriant growth. We have often found it growing on the soft soil of the hedge-bank. But as it is an essentially rock-loving fern, it loves best to grow on such hedge-banks as are built up of stone. When in these hedge-banks the stones become loose from age, it is generally the case that the falling leaves from bushes and trees annually store up deposits of leaf-mould in the interstices; and these are the chosen habitats of our Black Maidenhair Spleenwort.

It is a beautiful fern for the rockery, but must be planted in a shady, sheltered corner amongst stones, in a soil composed of rich sandy loam and

leaf-mould. It will grow readily in pots, but must be planted amongst the stones in which it delights.

5. THE LANCEOLATE SPLEENWORT.

Asplenium lanceolatum.

THERE is so much similarity between the Lanceolate and the Black Maidenhair Spleenwort, that fern-hunters are in danger oftentimes of mistaking the one for the other. But there is one mark by which the two ferns can be unmistakably distinguished from each other. In the Black Maidenhair the frond is broadest at its base, and tapers upwards gradually to its point; it is, in fact, distinctly triangular. In *Lanceolatum*, on the contrary, the frond is broadest about the centre of its leafy part; and from thence it tapers in both directions to its tip and to its base. In other respects the description of the fronds of *Adiantum nigrum* will very nearly apply to those of *Lanceolatum*, with this general difference, that the widest branches of the fronds of

Lanceolatum are perhaps not so broad and not quite so much divided as the widest branches of the fronds of *Adiantum nigrum*, which are, as already stated, the lowest branches in the frond. Another mark of recognition in *Lanceolatum* is the peculiar arrangement of the ripened spores. In *Adiantum nigrum* these are at first arranged in lines at the backs of the fronds; then they become confluent, and often densely crowd the entire under surface of the leaflets. In *Lanceolatum* they are ordinarily arranged in little round bulged clusters, which are distinct from each other.

The Black Maidenhair Spleenwort is widely distributed throughout the United Kingdom. But *Lanceolatum* is much rarer, and is confined in its range to the south and west of England, to South Wales, to the south of Ireland, and to the Channel Islands. In the Channel Islands it grows very luxuriantly. It varies in size, from tiny plants of some six inches long, to luxuriant specimens of a foot and eighteen inches long. Another peculiarity of *Lanceolatum* is that it prefers the sea-coast, and is often found on rocks in company

with the Marine Spleenwort. In the same company it is also often found growing luxuriantly in dripping sea-caves.

In the open-air fernery the Lanceolate Spleenwort requires peculiar care. It does not appear to habituate itself so readily to artificial conditions of existence as the Black Maidenhair; oftentimes, doubtless, the fault may lie with the fern-hunter, who perhaps has not used sufficient care in removing *Lanceolatum* from its native habitats. It often grows so firmly imbedded in rockly clefts that its eradication in an uninjured state is a matter of difficulty. But when this is properly accomplished, and the plant is secured with its crown uninjured, and its fibrous roots entire, careful cultivation will be rewarded by success. If planted in the open rockery, or indoors in pots, the soil should be composed of silver-sand, leaf-mould, and peat, mixed together in about equal proportions; and to this compost should be added some small pieces of sandstone.

Under a covering of glass, however, *Lanceolatum* is thoroughly at home; for such a method of culti-

vation appears more nearly to supply the natural conditions under which this beautiful fern grows in greatest luxuriance. We have devoted one little *terra cotta* stand and shade to three fine specimens of *Lanceolatum*, the same which we obtained from the vicinity of the Logan Stone, that crowns the heights of Lustleigh Cleave, on Dartmoor. We planted the roots, and gently wedged in the crowns of the plants between little blocks of sandstone, keeping them carefully under their glass covering, which is only removed from time to time to give air and water. They are thriving admirably, and are throwing up new fronds most vigorously. They delight in the shady situation in which they are placed, and revel in the perpetual moisture that surrounds their beautiful fronds, and distils on them like dewdrops.

6. THE GREEN SPLEENWORT.

Asplenium viridi.

A FERN of the rocky moorland and the mountain stream; not rare, but local in its distribution.

It grows in the moist interstices which lie between the fragments of stone. But it mostly loves a rocky home in immediate contiguity to the soft vapour of the wild cascade. It delights to grow in the tiny trickle caused by percolating water. Little wiry fibrous roots, that plunge within the hearts of rocks in search of the soft veins of leaf-mould; a black, tufted root-stock, from which start the lovely fronds; a short stipes, purple at its base, but beyond of a vivid and delightful green; a rachis of the same delightful green, and on each side of it, placed in alternation, a row of tiny-stemmed, egg-shaped, saw-edged leaflets, diminishing in size as the tiny frond tapers to a point. Each root-stock produces these pretty little fronds in thick clusters, so that a luxuriant specimen of the plant presents a delightfully fresh appearance. The fronds grow to various heights, their luxuriance depending on the favourable or unfavourable nature of the situation in which the plant grows. Sometimes they are not more than an inch in height; sometimes they are two or three, occasionally as much as eight or ten.

Delighting as it does in an atmosphere of moisture, it should be planted where it can secure the conditions which it requires. It may be grown in the rockery or in pots in the house. But under a covering of glass it will thrive admirably, for there it can most easily secure the moisture which it loves.

7. THE COMMON MAIDENHAIR SPLEENWORT.

Asplenium trichomanes.

THIS fern and the Green Spleenwort are very nearly related indeed; the great distinction being that *Viridi*, as its name seems to imply, has nearly the whole of its stipes and the whole of its rachis of a bright green, whilst *Trichomanes*, when mature, has both the stipes and rachis on its fronds of a dark, shining, purple colour, approaching to black. The Common Maidenhair Spleenwort is, too, as its name indicates, far more plentiful, and far more widely distributed throughout the United Kingdom, than its half-sister *Viridi*. It is, too, hardier than the latter, and easier of cultivation. The

same description, with the exceptions which have been pointed out, will apply in the case of both ferns : black, tufted root-stocks ; wiry, fibrous roots ; thin, narrow fronds ; brittle stems ; and two rows of leaflets,—now placed opposite in pairs, and now ranged alternately—egg-shaped and saw-edged. Both grow from their crowns in dense clusters. But, as we have already inferred, *Trichomanes* is found growing in sunnier and more exposed situations than *Viridi*. *Trichomanes*, nevertheless, though so hardy and bold, best loves deep shade and moisture. It never, however, grows on the ground, but must be elevated on wall, rock, or hedge-bank.

It is really difficult to imagine anything more beautiful than a wall or rock clothed with dense tufts of the fronds of *Trichomanes*, with their shining, purplish-black stems and refreshingly green leaflets. Peer over the arch of yonder bridge, beneath which the stream is surging and splashing ! Beyond you, dark woods tower up against the horizon ; beneath, the shining river reflects in its limpid surface the blue canopy

checkered with fleecy white clouds. You follow the course of the current, watching some foam spot as it eddies along, and disappears beneath the arch over which you are leaning. As you gaze intently into the stream, your cheeks are fanned by the brisk moorland breeze, which comes fresh laden with the sweet perfumes of wild flowers. But the breeze has stirred the tiny life which clings to the stony sides of the bridge; and your eyes are suddenly rivetted by waving tufts of purple and green—a mimic forest of fern-fronds clothing the arches of stone and mortar. Examine the exquisite arrangements of these beautiful fronds,—green gems on stalks like maiden's hair. O bountiful Creator, to spread out such rich treasures as these! to make the dry, hard stones live with their charming dress of glorious green!

Thousands of sights like these may be seen in the wild, rocky moorlands, on bridges which span the moorland streams. But much as it loves the wild home of Nature, and the damp rock in the moorland valley, the beautiful fronds

of the Common Maidenhair Spleenwort may be seen even in the heart of towns,—for it will grow on houses and garden walls. Though a rock-loving fern, it will also oftentimes grow with great luxuriance on the soft soil of a sloping hedge-bank.

Asplenium trichomanes is evergreen and hardy, enduring bravely through the winter, and sturdily retaining its little bristling stalks, even when their crops of leaves have gone. It is a delightful occupant of the open-air rockery; but it will grow readily and well in pots. Put it in a high and shady cleft of your rockery—give it leaf-mould, and sand, and broken pieces of soft brick or stone—and it will always be refreshing and delightful.

8. THE SEA SPLEENWORT.

Asplenium marinum.

THE habitats of the Sea Spleenwort are sea rocks and dripping sea caves. The instances are very few indeed in which it has been

found growing away from the sea, and even in these rare instances the plants have been removed but a short distance from the direct influence of the sea air. The true habitat of the Sea Spleenwort is the open sea coast; sometimes on the outside face of the rocks, and sometimes within shadowy caverns. It not only grows in crevices between the rocks, but on the rock itself, into which it insinuates its roots. Sometimes it grows on the roofs and at the sides of dripping caverns; and in such situations it will often spread its roots like a web over the damp, stony surfaces.

Its fronds are leathery in texture, and of so bright, fresh, and shining a green colour that it is positively refreshing to look upon them. Average specimens are six or eight inches long; but in dripping sea caves they sometimes hang pendant from the roofs, and reach a length of as much as eighteen inches. The shape of the frond of the Sea Spleenwort is narrowly oblong, broadest about the centre, narrowing slightly towards the base, tapering

upwards, and blunt-pointed. On each side of the rachis is a simple row of leaflets. These are arranged in pairs near the bottom of the frond, but become alternated towards the top. Immediately contiguous to, and on each side of the rachis, is a very narrow leafy wing or expansion, not readily discernible without close inspection, but serving in some sort to connect the several leaflets. These are somewhat irregularly egg-shaped, sometimes almost roughly four-sided, connected with the rachis at their lower side by means of a very short stalk, and slightly indented. The leaflets are merged in the tip of the frond.

We remember finding some specimens of the Sea Spleenwort down the Dart, about three or four miles from Totnes. We were looking for some small specimens of the fern, which we were told grew in the locality; but we lighted by chance upon a small cluster of larger plants. The tide was out, and as we were searching the rocky banks of the river, we suddenly rounded a jutting rocky corner, and came on

to a strand that would have been inaccessible at high tide. On our right the river bank shelved in, and formed a sort of overhanging projection, crowned with large shrubs, and sheltered by trees rising on the high ground above. On the soft red sandstone rock, and just above high-water level, we came upon a number of tufts of *Asplenium marinum*. It was a matter of considerable difficulty to get them out intact. The roots were positively imbedded in the solid rock; and it was only by dint of persevering labour with a chisel that we at length succeeded, by chipping away the surrounding rock, in getting out our plants entire. We carefully preserved our specimens; and we have them now, green and vigorous, in our glass case.

The Sea Spleenwort will rarely be found to grow, it is said, on the open rockery, away from the sea, as it needs the sea air. But in a glass case it will grow luxuriantly. It should be planted between fragments of rock—red sandstone if possible—in soil composed of sandy leaf-

mould and peat. It loves warmth and excessive moisture; and in the house these conditions are supplied if it be kept under a covering of glass. We have adopted the plan of devoting a large ornamental fern-pan to our specimens, filling up with the necessary soil upon a layer of broken flower-pot and charcoal. On the top of the soil are large pieces of brick and stone, and between these our ferns are planted. The whole is covered with a large bell glass; and under the same covering we have the Lanceolate Spleenwort and the True Maidenhair. It is, in fact, a miniature rockery which we have established under glass. Already the moisture has coated the bricks and stony surfaces with moss and seedling ferns; and we take a keen delight from time to time in uncovering our miniature "Fern Paradise" to get a brief glimpse of the shining fern-fronds, tipped with the mimic dewdrops which distil upon them in their moist prison.

9. THE SCALY SPLEENWORT.

Asplenium ceterach.

FOR richness and variety of colouring, the Scale Fern is the handsomest of the Spleenworts. It is, indeed, an exquisite little plant. Like the rest of its family, it loves to grow on rocks and walls, even preferring the latter, and oftentimes growing abundantly within town limits, on barn and garden walls, and even on house walls. Average specimens are about three or four inches in length; but, under favourable conditions, they may attain a length of six, seven, eight, or more inches. They are believed to have an especial fondness for old mortar; hence the reason why they are so frequently found on old walls.

The frond of the Scaly Spleenwort has a short stipes, scale-covered; and its upper portion consists of one elongated, deeply and widely scalloped leaf; or, perhaps, to make the explanation clearer, it would be desirable to liken the frond of the Scale Fern to a coarse, double-edged saw; but

what would correspond to the teeth of the saw are narrow, blunt-pointed lobes. The frond is widest at its centre, and tapers at each end. It has a thick midrib or rachis. What constitutes the peculiar elegance of the Scale Fern is the contrast presented by the two sides of the frond. Its upper surface is of a rich bluish-green, soft and velvety to the touch; its under surface is completely hidden by a thick drapery of densely-packed reddish-brown scales. These beautiful scales extend to every part of the back of the frond, covering up midrib and pinnule, and affording a snug hiding place for the spores. The fronds grow in tufts from a central crown, and are always most luxuriant when found at the tops of walls, under the shelter of overhanging trees.

Well do we remember the pleasure we experienced on finding, after a long search, our first specimens of the Scale Fern. We had previously read the description of this beautiful species, and had seen the coloured representations of it; but had never happened to set eyes

on the living plant, either in a wild or cultivated state. We, therefore, started in our first search for the wild plant from Totnes in the direction of Berry Pomeroy Castle,—having been assured that we should find some specimens on an old wall which skirted the wood surrounding the Castle. We were some time in finding the old wall in question; but we at length lighted upon it. Carefully we searched on both sides for some distance, but without encountering anything at all like our descriptions of *Ceterach*. Presently, however, the boundary wall was cast into deeper shadow by the high and overlopping branches of the trees in the wood; and continuing our search along the inner side of the wall, we at length found several fine plants of the Scale Fern revelling in the old mortar and leaf-mould, in a deep shady cleft formed by the pointed coping stones. There could be no mistaking the strongly-marked characteristics of *Ceterach*—the thick, green velvety texture of the frond on one side, and the dense carpeting of rich reddish-brown scales on the under surface.

The finest specimens of the beautiful Scale Fern which we have ever encountered, we found on the top of a very high wall which skirted another wood in the neighbourhood of Totnes. The large stones at the top of the wall had become loose with time, and the perpetual droppings of leaves during many years from the trees which overhung it, had accumulated a rich deposit of leaf-mould between the loosened stones. Immediately underneath the crowning stones we found the largest specimens of *Ceterach*, with fronds over seven inches long, and enormous roots extending to nearly the whole width of the wall, and forming a compact mass nearly a foot square. This wall, like the one at Berry Pomeroy, was immersed in the deepest shade flung by the overhanging trees.

Planted in the highest and shadiest clefts of the out-of-door rockery, with leaf-mould, sand, and old bits of mortar for soil ; kept sufficiently moist, but not drenched with water, the elegant Scale Fern will succeed well.

THE FILMY FERNS.

CHAPTER VII.

THE FILMY FERNS.

I. THE TUNBRIDGE FILMY FERN.

Hymenophyllum tunbridgense.

THE Filmy Ferns form a sort of connecting link between the ferns and the mosses. They are the tiniest of all the British ferns, forming little tufts oftentimes only one inch in length; but sometimes growing to a length of six inches.

The Tunbridge Filmy Fern—so called because it was first noticed in the neighbourhood of Tunbridge Wells—is a tiny moss-like plant found growing on rocks and boulders in the immediate vicinity of streams of water. The filmy, pellucid texture of the fronds would shrivel up, were the plant exposed to dry, hot air. It can only therefore exist in a constant atmosphere of moisture, such as is to be found where water is continually

present. It delights in the spray of waterfalls, or to be perched on the damp rocks round which the mountain streams rush and roar. In such situations it has a wide distribution throughout the United Kingdom. The fronds grow from little black, wire-like rhizomes, which often become densely interlaced with the mosses which grow on boulder-tops in mid-stream, or wherever perpetual moisture makes moss life predominant. They have short wire-like stems, and the leafy or filmy portion consists of a series of branched veins arranged alternately on each side of the rachis. The primary veins are divided into veinlets, which are arranged in pairs on each side of the primary veins. Each vein, whether primary or secondary, is bordered by a narrow, filmy, leafy wing. The seeds, when they are formed, are placed in little cup-shaped receptacles in the angles made by the rachis and the primary branches of the frond. The general outline of the latter is somewhat egg-shaped. The leafy filaments are of a dull, brownish-green colour, and semi-transparent.

2. THE ONE-SIDED FILMY FERN.

Hymenophyllum unilaterale.

THE two Filmy Ferns resemble each other closely in many important respects. But *Unilaterale* or *Wilsoni*, as it is also called, is chiefly distinguished from *Tunbridgense* by having the leafy filaments on the primary branches of the fronds produced on the upper surface only of the branches, instead of on both sides, above and beneath, which is the case in the Tunbridge Filmy Fern. In *Unilaterale*, as in *Tunbridgense*, what corresponds in ordinary ferns to the leaflets of the fronds are branched veins, with filmy, semi-transparent, wing-like borders. The distinction between the two ferns is somewhat slight. But both are found growing under the same conditions, often in company, their thin wire-like rhizomes densely interlacing with each other, and with the roots of the mosses which cover the moist rocky surfaces of the habitats of the *Hymenophyllums*.

When the natural conditions under which the Filmy Ferns grow can be imitated in the fern

garden, then these beautiful little pellucid-leaved plants will thrive luxuriantly; but the natural conditions can be imitated perfectly under a covering of glass, which will secure the object of keeping an atmosphere of perpetual moisture around the rhizomes and fronds. The soil should be peat and silver sand, and on this compost should be arranged little blocks of stone, between which the roots should be placed. The whole should be saturated with water, and then covered with the glass shade. Here the Filmy Ferns will grow luxuriantly, and will thus, in the warm humidity of their adopted home, exhibit the freshness which they can only otherwise exhibit in their rocky habitats amongst the misty thunders of the moorland streams.

L'ENVOI.

L'ENVOI.

THE author cannot take leave of his readers without expressing the earnest hope that some pleasure and some profit may have been derived by those who have closely followed him through his "Fern Paradise." To him, at least, the work of writing these pages has been truly a labour of love: for it has called up vividly before his mind's eye delightful scenes which he has with, he fears, but imperfect success attempted to describe. But had not the task been light and pleasant in itself, it would have been lightened and rendered enjoyable by a consciousness of the great importance of the object for which it was undertaken.

For surely to aim at giving pleasure to others is an object of the highest importance; and there can be no purer enjoyment than that

derived from the knowledge that such pleasure has really been afforded.

If, however, the author should have succeeded in his object, he trusts that any pleasurable impressions which may have been conveyed to those who have followed him thus far through this volume will not be merely transient, or such as might be experienced if, to a rapid perusal of the descriptions which have been given of ferns and ferny lanes, were to succeed obliviousness of the important end which the book is intended to secure.

The author would wish to address his readers not collectively only, but individually. His labour will have missed its purpose if it does not, besides creating pleasant fancies, lead to practical and permanent good. Will it be too much to hope that *every one* who reads these pages will receive some benefit from their perusal, and will not lay the volume aside without having determined to carry out in practice the suggestions which it contains? There is the greater reason to hope for such a result because of the very small amount

of trouble and expense which need be involved in the attempt. Those of course who possess the necessary means, and who are not pressed for time, and who moreover are inclined to enter thoroughly and heartily into the spirit of the author's suggestions, can carry them out with the most elaborate completeness. There are abundant facilities for the exercise of the most luxurious and expensive taste in the selection of the accessories needed for transforming into a "Fern Paradise" either dwelling-house or garden. In the drawing-rooms and sitting-rooms of the houses belonging to the rich it is not by any means uncommon to find plant-cases or flower-pots of an ornamental kind. Sometimes a number of these may be found in one room, and the fact is an indication that the owner or some member of his household possesses a taste which is strongly appreciative of the beauties of nature. Sometimes the plants are ferns, more frequently they are flowering plants; but even in cases where this taste for introducing plants into the dwelling-house has been exercised more freely

than usual, it is seldom that the effect produced is striking. The conservatory—when an adjunct of the drawing-room, and immediately contiguous to it—supplies in some degree the requirements of a refined taste; but dwelling rooms are mostly subjected to the despotic sway of a system of conventional ornamentation. Even rigid conventionalism, however, pays homage to nature, by calling artistic effort into requisition in order to produce petrified imitations of leaves and flowers. The high art of the painter and sculptor, and the ruder arts of house decorating, are employed in this work of imitation; but the result—often beautiful and striking as an artistic success—pales before the exquisite reality of nature itself.

Why then do we not sweep away from our dwelling-houses the rigid conventionalism which is content to represent nature in stereotyped lines in places where she is only too ready to come herself, in all her chaste and simple yet inimitable loveliness? Her image may still be preserved in stereotype where she cannot come

herself; but away with the folly of setting up lifeless imitations where the charming reality can exist, and smile upon us in its pure and dewy freshness!

Nothing less, it will be seen, than a revolution in domestic ornamentation will realise the author's ideal—an ideal which he fears he has faintly and very imperfectly endeavoured to represent in these pages. What effect could be more pleasing, more delightful, more refreshing, and exhilarating to wearied town dwellers, than the sight of graceful fern-fronds *everywhere* surrounding them in and about their houses? Money, as already shown, can be freely lavished if it be desired to employ artistic accessories in indulging the taste which the author desires to see developed: fern-cases, stands and brackets, boxes, hanging-baskets, pots, and, indeed, almost every conceivable arrangement for holding the beautiful plants, with every elaboration of carving and design, can be obtained in almost infinite variety. The same facilities exist for transforming the lawn or the garden into a "Fern Paradise"; and the means employed

can here also be as elaborate and as artistic as wealth may desire. Shady garden-walls may thus be draped with ferny fronds. Embankments can be thrown up to furnish abundant scope for the development of the larger species of ferns: deep cuttings may be made, whose sides may afford a semi-subterranean hiding place for the smaller species. Artificial rockery can be made in every direction. Fountains may be introduced in order more readily to supply the peculiar conditions of moisture, without which some of the graceful plants will not live or thrive. In the same way the soil necessary for the successful culture of the plants can be supplied; and the aspect can be chosen with a due regard to the requirements of nature. To the rich, expense would be no object, and it would be lavished in the exercise of a worthy taste.

But—it is important to remember—costly accessories to fern culture are not *necessary*. The author would wish to see his ideal universally established. The most splendid elaboration which art could suggest, would be overshadowed

by the majesty of gracefulness which the ferns embody. Hence, the simplest and most inexpensive materials are all that *need* be employed to produce the most beautiful effects. The humblest householder can find no difficulty in obtaining these materials. The ordinary red flower-pots, for instance, are within the reach of all, even the very poorest, and these can be brought fully into requisition to aid the fern-lover in transforming his home into a "Fern Paradise." The lovely plants will be none the less graceful because grown in these simple contrivances. On the contrary, they will show to all the greater advantage when their own lovely forms are left—unsurrounded by artistic adornments—to speak to the eye with the quiet eloquence of natural grace.

In the garden also, however small it may be, or even in the paved and narrow yard which may exist, when a garden is absent, the same simplicity of arrangement will suffice for producing most pleasing effects. Rockwork, for instance, will provide, perhaps, the most convenient site for the disposition of garden ferns; and here it will be

absolutely essential rigidly to exclude anything like prim ornamentation. There must be no brilliantly-coloured or polished stones; no coral; no regular gradation of size and shape in the material used. Rough misshapen blocks of stone, arranged according to what may be called the symmetry of ruggedness, will best suit the graceful ferny forms.

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